

A SOLUTION TO FERMI'S PARADOX

Introduction

What is Fermi's paradox? In its simplest form, it is a question relating to the size, scale and length of the universe, the size, scale and length of our own species' existence and the lack of contact from any other inhabited world in said universe.

There are between 100 and 400 billion stars in our galaxy and approximately 100 trillion galaxies in our universe. The age of said universe is 13 to 15 billion years. The Earth's entire history so far encompasses 4 billion years. Life encompasses approximately 2 billion years. The Permian Explosion which created an abundance of life occurred roughly 800 million years ago. The dinosaurs, the most successful species of life on Earth dwelled here for millions of years and only died out 65 million years ago.

Humanity and other hominids came into their own evolutionarily speaking 2 million years ago and modern humans emerged 250,000 years ago. The first example of writing is from 4 to 5 thousand years ago, the first examples of art found are only 20,000 years ago and the first tools using metal are only 4 thousand again.

Paper, metal forging, ceramics, ship-building, the compass, gunpowder, the printing press, the first computers, a fucking rocket to the moon, all technological achievements which only occurred in the last 4 thousand years or less.

It took Earth 4 billion years to create a species capable of leaving Earth but said species only attempted technological achievements in the last seconds of its existence; it would be the same as if an infant spent eighty years unable to move or feed itself and then in the last four minutes of its life produced the total of Van Gogh's paintings, solved cold fusion, built a rocket, wrote four thousand symphonies and operas, invented a new mathematics and became an instant expert at every sexual position known to man, woman and several species said infant created whole cloth out of boredom.

And then said infant with one minute left for its eighty-first birth looks out and asks where everyone else is. And finds out it might be an only child.

Of course, crucial to the question is how nothing else of this magnitude happened at any previous point in Earth's history. Why didn't dinosaurs compose symphonies or trilobites solve higher mathematical equations? Why can't dolphins do our taxes or chimpanzees build rockets? This is not an idle question. Out of a universe of nearly infinite complexity, the number of potentially life-bearing worlds is itself infinite and the number of worlds of roughly the same age and density as Earth, composed of similar constituents is itself infinite. Ergo, infinity plus infinity equals infinity. Ergo, where is everybody else?

Now there are several possible reasons for this discrepancy, anything from it is intelligent life's nature to destroy itself, (the suicidal species theory,) all intelligent life tries to destroy other intelligent life, (the American theory,) or life on other planets is too alien to communicate properly and intelligently with life on Earth or is too shallow to truly be called intelligence as we would understand it, (the celebrity theory.)

Rather than provide however a complex scientific forum let's reduce things down to a microcosm of reality and explore exactly what the universe is like and why finding life is so difficult in it.

The Players and the Board

Let us imagine a world and for argument's sake let us call this world Sedi-Darsyal or Seti, though I like Sedi better. Said world is of infinite size and infinite space. It is uniformly flat. However, it possesses forests, several mountains and several oceans, each of which themselves are potentially infinite in size and scale.

Now, let us place a person upon said plain.

What would he or she observe?

First, even though it is a world and therefore a sphere let us say we exist on the interior side of said sphere; in other words, no object in existence is barred from our sight. Were this object of infinite size and we were on the anterior side at no point would we be able to observe anything more than a small area of space and no matter how large said area would be would be insufficient to observe even one trillionth the total volume of the universe.

Ergo, we would have to exist on the interior side.

Now, again what might one observe? Let us say for argument's sake said individual exists in a sphere which is illuminated. There is a "sun," which shines forth on everything at all times. Said light allows one to see in all directions unobstructed. One can consider it not truly a "sun" but our perceptual awareness and as such can be brightened or dimmed depending upon how we as individuals look at anything.

Now what might one observe? They would observe other people milling about, all circling or near a secondary source of light, a lamp for example. Let us imagine a group of people milling about a lamppost.

The farthest person in said group cannot be seen without direct focus, otherwise he or she cannot be noticed. Each of the others can be noticed when they are close enough but something strange is understood.

If one takes a picture of each person as they pass by, or takes a picture of the lamppost they suddenly understand that each picture exists not only in a different space but in a different time.

The light from said lamppost is from a point in time eight minutes ago.

Each person is likewise from a point in their past, captured and recorded by the present.

The individual is travelling through time and the farther afield they look the further back in time it is.

So, our individual ignores the people milling about and ignores the lamppost; they are of no further use in this thought experiment. Rather said person decides to look elsewhere for others like him or herself.

The closest individual is 4.5 light years away, meaning should one detect a person at this distance waving said wave happened 4 and a half years in the past. Now we have established the first problem with Fermi's paradox; any detection of life, by definition if observed is already past tense.

As one perceives the horizon it recedes not in the scale of light years but on the scale of magnitudes of trillions of light years, meaning it is conceivable to observe a point in the past, theoretically, which predates the universe itself.

Maybe if one can see far enough, they might even observe the big bang. I am being facetious in this but not by much; our closest spiral galaxy Andromeda is millions of light years away meaning any worlds or life found is millions of years in the past. Andromeda is our closest neighbour beyond the Magellanic Clouds, meaning any other galaxy is conceivably twice as far or further than that.

Now let us return to our two individuals again.

Our individual has noted another and has noted the wave. Already said wave is four and a half years in the past so by the time he or she responds it will be nine years between initial contact and initial response.

So, our observer notes other individuals, other people near him or her.

However, there is no evidence they have noticed said observer.

What does one do?

The simplest answer is to wave. But remember any action is already past tense and any response is itself past tense. Imagine a bacterium crawling along the skin of one of these individuals; in the time it would take for a contact and response to occur a million generations would live and die and if a bacterium noticed the message this itself does not mean others will nor does it mean it can respond itself.

How would you therefore know if contact has been made or if anyone is there interested in talking at all?

Now why mention a bacterium and not the individual?

If one observed a body unmoving, lifeless, dead, would they wave at said body? No. Our individual is not a man or a woman but an ecosystem, a collection of interconnected systems and subsystems all operating to achieve the end-in-itself of life.

A man can no more live without bacteria than a stone can live. Ergo any individual who is not an ecosystem of some kind is not alive and dead things tend not to respond.

So, knowing whether or not said ecosystem is in place helps one determine where to look.

Again, why would a bacterium need to know? Imagine life as a series of patterns easily broken. A man may fall and hurt himself at which point his body begins repairs. These biological points are inborn; one need not tell a wound how to heal.

But knowledge is different, vastly so. Experience creates patterns, past events create patterns. If two individuals communicated each second of each day, touched, and were in communion of sorts, on a biological level they would also intermingle together. Diseases, bacteria, etc, would all become accustomed to one another. Disease works specifically by targeting biological systems which are not used to them; this is why the Black Death and smallpox were so lethal in North and South America. No experience with the virus before its first virulency, an

untouched continent awaiting death, at which point millions, not knowing why, died.

Our individual is observing others, each one so far away that direct contact seems impossible. If communication happened though would not there be evidence in the biology of each part of the whole? In other words, would life remember encountering the alien from itself?

As I said knowledge is different, more fragile. Less likely to endure.

So, we have our individuals, we have our ecosystems, we have our attempts at communication and the first obvious barrier. Time.

But all this presupposes something profound. It presupposes we can or have the capacity to observe attempts at communication at all. I mentioned forests, mountains and oceans. Let's see what I mean.

The universe is not static nor truly "flat." There are barriers, nebulae for one, and the galactic heart is another. And there is the space between galaxies to consider, not to mention the idea of both dark matter and dark energy.

We have our field and our individuals clustered about. Now in the distance, we can note not merely a few people but a mountain of people a billion strong, all seemingly tightly packed together, most of whom are dead.

We can also observe a vast black sea or ocean surrounding this small island of matter. Said ocean is so vast it dwarfs the islands we are on. And there are forests, black forests which reveal very little or nothing. They can either be black holes or nebulae or both, but the function is the same; to provide a further barrier to exploration and observation.

So, the infinite universe is far less infinite than initially assumed. A vast ocean, so vast as to make galaxies pale to the size of snowflakes. Nebulae and black holes we can't see past. And the largest cluster of individuals we can observe exist near one of the largest mountains, and are being poisoned, causing their deaths.

Now, why make this point?

Black holes, of which there is a monster at our galaxy's heart, tear at everything and are a massive maelstrom, a shockwave capable of breaking stars apart to their constituent elements. Upon our island continent, our observer is rocked by a storm every 250 million years. It is not exact, it is even debated whether the storm is due to the movement across the continent or something else, but the ecosystem present has shown evidence of systemic widespread death.

So potentially the closer one walks inland toward the centre of the storm the worse the storm is, or the greater the frequency of the blast furnace of wind and destruction. So, the greatest potential number of people could perhaps be dead.

Already our infinite space has contracted to a small ring of ground and the further we look, trying to find the total area, the further back in time one is. One does not take a leisurely stroll on the beach with a friend by climbing Everest. One does not go to a cemetery to look for friendship.

Now, again this is a supposition. It is possible the galactic heart has liveable worlds, but let us for argument say no. Our observer can see individuals but not movement and so close that life on the mountain is tantamount to absolute uncertainty.

Again, let us turn to the ocean. Dark matter, unseen matter, the potential for something beyond, light-less suns, invisible individuals; this is possible, but does it matter? For the moment, no.

The second problem in Fermi's paradox. Space.

Space is infinite, the number of stars infinite, the number of worlds infinite, and yet, and yet, and yet there are death zones, empty places, invisible worlds or star systems or things more alien, meaning all our observer can see is what is visible and all our observer can know is what is currently knowable.

Out of infinity, one can see the farther shore of alien continents, however, one cannot detect a person waving from there, and if they could, consider that said person died millions of years ago.

Therefore, all attempts at finding a companion depend upon one isle of stars, one track of ground and the certainty or uncertainty of what one is looking for next.

We have now presented the players and the board.

How exactly does one play the game? And why exactly does it seem everyone but our theoretical individual has already lost?

Why Is/Has Everyone Lost?

At heart, Fermi's paradox forms a kind of lynchpin on the nature of what it means to be human. It is both a human failing and a human accomplishment to anthropomorphize the universe and all things in it, to argue convincingly if life exists it must be like us, if life is intelligent, it must be intelligent the same way we are, and if we are seeking out for life other forms of life naturally must be seeking out for us.

Now this supposition is both intriguing and frightening. It is intriguing because if true humanity truly is not alone beyond the farthest stars. It is frightening because after witnessing millions of years of conflict, seeing life at both its most savage and most ignorant, is it truly wise to compound our tragedies by seeking out the tragedies of others if such others exist?

This is not an idle question. If life beyond Earth is like Earth and if intelligent life is like our own does that constitute a better reason to seek it out or a better reason to leave it alone? And yet humanity has endeavoured to find intelligent life and though we have access to information over a thousand extrasolar worlds we have seen no evidence of said life.

Now, why is this so?

There are several theories as to why.

1) It is the nature of intelligent life to destroy itself.

At heart this theory speculates intelligence is the cause of its own ruin, i.e., life at this threshold of intelligence exists before an evolutionary dead end. Is this supposition possible? Yes. But is this supposition probable?

It is conceivable *a* civilization could perish, or 2 or 12, but *every* civilization? This staggers credulity. The odds of extinction in every context are too great, too unlikely to be factually true. One could conceive a world perishing due to this level of gross incompetence but not every world.

But how do I prove my point? It is after all truly impossible to disprove a negative. Or is it?

How might a species destroy itself? What manners might it use? Atomic warfare is most likely, but were this so would not we be able to detect this?

Let us return to Sedi-Darsyal and our observer.

Our observer can see another who has a pistol. Said pistol is pointed at his or her head, and is fired. Will this kill the individual? Yes. Will this *destroy* the individual? No. This is a crucial distinction to make and one which cannot be stated lightly; merely killing a world does not mean said world no longer exists.

In point of fact, due to the nature of time displacement even destroying a world does not destroy it since the image of said world can be observed for millions of years after its actual demise.

But would this not obscure any evidence of death?

Perhaps the observed is suicidal and even under close watch it will be millions of years before the death is revealed. But we are looking at not *an* individual but potentially a billion individuals. Are they all suicidal? Is the entire continent of which I speak riddled with pistols and self-aiming morose death-seekers? Why?

The point of evolution at its heart is survival. Intelligence is deemed for humans an evolutionary edge. One individual, one world could be destroyed by depression, *but all of them?*

If intelligence is advantageous then it increases the odds of survival. If survival's odds are increased it is more likely intelligent species will endure. If intelligent species endure it is unlikely they will kill themselves since by definition *intelligent species will endure*.

One can argue that humanity although intelligent is not wise, but in looking at each individual the odds do not lead to conclusive evidence of suicide. If a man is struck by lightning indoors one does not assume he deserved it. No, merely arguing the great filter as the cause for the lack of intelligence found so far in the universe is not reasonable. Statistically speaking it is an impossibility.

Moreover, let us return to the plain.

Let for argument's sake argue that a species has committed suicide, what might our observer observe? Imagine on the plain a large edifice, a house, a temple, empty. Why a large structure? Assuming total destruction

implies a species initially capable of total creation. Therefore, the temple. Would such a structure survive? Irrelevant since in the past we in the present would still be capable of observing it.

In comparison if every nuclear warhead went off at once humanity would die certainly, most life would die, but the Earth would endure, and said destruction would kill *most* life, hardly all. And our weapons are capable of destroying cities. And yet our cities are capable of covering large portions of the globe. If our weapons are not capable of utter ruin neither is our capacity to create. A species that destroyed itself would have possessed creativity equalled to its destructive bent.

If suicide were the chief explanation imagine a plain littered of temples, monuments, structures, ziggurats and obelisks because the only way to destroy our observer is to build something capable of absolute devastation and to date, any species able to destroy so completely is beyond anything humanity currently possesses as a skill. Ergo the technology pre-destruction must utterly dwarf our own.

Any dead worlds would be dead, if murdered, by technological means, and though sticks and stones can kill only massive energy can potentially kill all. A species no more advanced than a Neanderthal or human from 250,000 thousand years ago could wipe itself out but could not obliterate all who would come after it. Since we know ten plus hominid species existed on Earth and after said extinction intelligent life continued, we can conclude this likewise could happen on other worlds as well, meaning not only is intelligent life possible but so too is multiple intelligences on a single planet possible. Ergo life would still have a chance to produce intelligent life again *until it got it right*.

Creativity coupled with destructiveness compounded by error multiplied by technology is less likely than creativity coupled with destruction multiplied by technology halved by error.

If one imagines creativity as C, destructive-bent as D, error as E and technology as T,

$C \times D \times E \text{ to the } 10^{\text{th}} \text{ power} \times T = \text{Extinction.}$

$C \times D \times T / E \text{ to the } 5^{\text{th}} \text{ power} \times T = \text{Survival.}$

Why is E such a wide variable in this calculation?

Error by definition is a common occurrence. Error and mistakes are normal. It is impossible to remove the potential of error from the equation. Any intelligent species would know this and put in safeguards against accidental extinction. Any species whose destructiveness and self-destructiveness remain intact could lead to extinction. But it is the potential for mistake, for error, coupled with everything else which matters. Sometimes suicide could be accidental death but accidental death is usually the result of imprudence. Again, due to the nature of intelligence, I find it improbable for this aspect to have taken place on every world at every point in the history of the universe until now, or that it would continue indefinitely

Anything advanced enough to kill itself and its world is overt enough to leave a lot of clues behind. I reject possibility 1 for these reasons.

2) It is the nature of intelligent life to destroy all others.

The previous concept in a way disposes of concept 2 nicely. Concepts 1 and 2 cancel each other out. Any species capable and willing to destroy other intelligent species has already destroyed itself first.

Define it as a sub-paradox; any species capable of killing us has killed itself first. But if so, does this not explain there being no life in the cosmos? Question: is self-destruction evolutionarily advantageous to a species at large?

This differs from extinction outright. Unlike species that did not survive due to outside forces, this asks if an evolved species would be evolutionarily advanced *by* specifically being self-destructive enough to destroy itself.

If our observer witnessed another pointing a gun at him or her how would this would-be murderer know the gun worked? One does not perfectly arrive at a weapon after all; even an obsidian knife is a piece of art, using technical know-how.

Ergo our murderer would have had to practice, refine, develop and test said weapon on others. Again, possible, but no weapon created, not even a bullet is capable of escaping the friction and prison of gravity. Nuclear weapons have only been used twice since their creation and though they have increased in yield they are already so terrible as to be useless on the battlefield. A single nuclear weapon is not capable of achieving a tactical victory

between nations since said weapon destroys more than it takes in or conquers. One does not invade a home to live in it by setting it on fire first.

Any weapon greater in scope than this would only be used as a tool of war. Any war requiring this would be considered most likely by all involved as the Last War. Any species desiring, as our murderer here does, to kill others, has only one being to test the weapon on first before firing it, to confirm it will be successful, i.e., himself.

Anything powerful enough to kill us had to have been tested first. And since faster-than-light travel had not yet occurred on Earth before the emergence of nuclear weapons one can assume a similar scenario elsewhere. This is a gun designed to fire specifically at the one who made it, at whoever made it first.

But let us say our murderer has not shot himself in the head, that somehow, he has survived. He aims, he fires, but by the time he fires, our observer has already moved out of the way. Or equally likely our observer no longer exists.

Why take aim and fire at a target which in all likelihood has ceased to be? Now one can argue the classic cliché, an interstellar war, but this is not Star Wars or Star Trek. In reality, only a wormhole could be used, and even then, it is a theoretical point, a point which, if developed makes the idea of wiping out life even more ludicrously absurd.

Let us return to our two individuals again.

Again, the murderer takes aim, but, wait, instead by magic, (considering wormholes have not been proved but only speculated upon magic is as valid a point as science,) our murderer is now standing in the proximity of his victim.

Said victim cannot fight back. The murderer takes aim and fires, killing our observer in this context. Let us say by magic our murderer looks for other people to kill. Assuming the universe has only one murderer in it, it will still take untold hundreds of trillions of years to kill everyone else.

And there is a time constraint here.

Even if our murderer has an infinite number of bullets, even if our murderer has a magical way of crossing great distances at the same moment someone else statistically speaking is doing the same thing.

In a galaxy of 100 billion stars conceivably there are 10,000 to 100,000 civilizations. If FTL technology cannot happen it will take even the most blood-thirsty species 100,000 years to go from their world on one edge of the galaxy to Earth on the other, presupposing they represent a counter-solar system to our own.

And that's if they go in a straight line.

And that's if their vessels and civilization remain functional for said 100,000 years. Consider anything that can go wrong will go wrong; it is inconceivable for a technology to remain fixed and workable after 100,000 years regardless of its origins.

Perhaps our would-be conquerors are waiting to perfect their technology utterly but if one is waiting for perfection before they begin, they will of course never begin.

And if there are 999,999 other civilizations it is inconceivable they too will have flawless technology. Why mention this? If it is the nature of intelligence to destroy other intelligent life and let us say magically half of them are given wormhole technology suddenly it is no longer our murderer with a gun. Now it becomes a duel, and in any duel, there is a fifty percent chance of survival.

No duel exists where in every case both sides die. It is statistically improbable. So, assuming this theory is accurate there must be, not our observer and his or her murderer but two people duelling, of which one should survive.

However, even magically moving from point to point one civilization actively seeking out and destroying others would mean them combing through every world in existence, or at least our galaxy. Our would-be murderer would spend his time going over every rock on the off chance of killing someone and by the time said victim is found would our murderer still exist?

Or would our observer by this time merely be watching a mirage taking aim and firing or watching a mirage be murdered by another?

The risks, costs and expenses outweigh the rewards, and more conceivably if one can magically go anywhere why kill anyone? A species advanced enough to do this would have access to every world in the galaxy, or universe. We'd notice them when they quarantined us because putting a barrier around our system would cost less than killing us. Or if they came to kill us that would be the most wasteful use of resources imaginable. And

why? Because in an infinite universe accessible to one civilization conflict over resources becomes an obsolete reason to wage war and despite all else resources matter. If one has infinite resources why spend more to get less? Exterminating species that are no threat to you is a waste of ability and the mechanisms needed to destroy us would have to be great enough to matter. Still, it is possible, but . . .

One or two murderers I'd buy. A galaxy full of them? Intelligence plus self-preservation does not equal genocide. Or put another way, anything advanced enough to destroy everything is smart enough not to.

3) Periodic extinction by natural events.

Here, more than anywhere, we are getting into an interesting paradox all its own.

Humanity is only 250,000 years old, give or take, our species of hominids is 2 million, mammals easily 70 or 80 million, multicellular life hundreds of millions, and bacteria close over 3 billion years.

We know from the fossil record that ninety-nine percent of all life is gone. We know also that mega-extinction-level events have happened at least 5 times in the last, few billion years. There have also been countless micro-extinction events, changing and reshaping organisms or ending their genomes.

And yet, and this is where the paradox comes in, each subsequent group has gotten more advanced. A T. Rex is far superior to a plankton in terms of both sophistication and ability. How much more is a human superior to a T. Rex considering humans can build machines to do what a T. Rex could do manually while a T. Rex could never build tools to replicate human action? This is important because while humans can develop technology to mirror other organisms, thereby rapidly increasing human adaptability, other species cannot adapt themselves to mimic either humans or any other species on Earth.

A man can develop machines smaller than an ant to work like one; an ant cannot build a machine to replicate a man. And yet ants predate humans by hundreds of millions of years. It is paradoxical but true that each younger species has developed greater and faster than their older compatriots; the emergence of life has been an upward swing from ooze to thought.

And all of this is the product of extinction.

Let us return to our plain but now we can see a garden.

It is vast, with fields of flowers of all types spread in all directions. Our observer has shrunk, or grown, now able to observe each flower, grain of sand, blade of grass or see the entire garden which in this extrapolation equals roughly one-third the galactic continent. Why not the entire area? I assume the core of our galaxy to be a dead-zone and dead things don't grow on dead things. One can't multiply anything by zero. I could of course be wrong.

Now as our observer watches said garden remains unchanged. Our individual watches said garden and focuses upon an area directly about him or herself, meaning that time distortion does not happen.

Now let us argue that the last four billion years have been reduced in time to four hours. For the first half-hour said garden is empty then springs to be, then at a certain point most of it is destroyed and yet rather than the damage being permanent new life inevitably emerges.

And, and this is crucial, each step after destruction increases the complexity of life. The garden gets better.

First, we have simple grasses, then death, then more complex flowers, death, then flowers of varied hues, varied coloration, varied size, again death, and now by the start of the fourth hour the variety has jumped from a few species to untold millions, and by the fifth death even if it happens just ten minutes in the past the variation between this moment and the garden's beginning is astonishing, to say the least.

Remember for most of Earth's history all life was bacteria and no matter how advanced certainly incapable of thought. Then came the emergence of vertebrate life, of mammals, dinosaurs, birds, hominids, and humans. From ooze to rocket the distance is 3 billion years, but each extinction-level event shortened the distance massively.

Why? Because, at heart, extinction is not death, that's why.

This is odd to say but true. Extinction is partial death and total recreation. Each time a large niche of life is exterminated those that survive must now flow and fit into the emptied niches, must replace herbivores, predators, flyers, swimmers, runners, and whatever adaptations carried them through the valley of purgatory are carried through their descendants even if they no longer need them.

Humans for example give birth to live young, a trait unshared by reptiles or birds, or insects for that matter. Yet placental birth is a very useful adaption for a species that has suffered a major extinction-level event *and*

survived.

Intelligence itself may yet be a sign of survival through hardship. This is not confirmed though, nor would I advocate the idea of social Darwinism which is absurd at best and offensive at worst.

But why would I who just argued the benefit of extinction argue social engineering to be flawed? And how does any of this tie into the 3rd consideration of Fermi's paradox?

As I said extinction-level events are not merely death but change. Yet said events are random. Even if there truly is a periodic extinction cause, every 250 million years there is no consensus as to what exactly it is. It's like fearing a heart attack and not noticing the truck barreling down on you; both will kill but preventing said death requires two distinctly different methods of prevention and defence.

No, merely knowing death is coming does not translate to anticipating how death comes and this is vital if one extinction-level event is caused by one set of parameters and another extinction-level event is caused by another.

A world freezing to death holds different challenges than a world suffering the terrible effects of an atmosphere becoming oxygenated. Death comes in many shapes and sizes and putting on a coat when one fears the cold when they are being shot at is not an evolutionarily sound thing to do.

Eugenicists argued they could determine which traits were desirable or not. This more than anything might prove Shaw's claim that the surest sign of intelligent life in the universe is that it hasn't tried to contact us.

But why does this matter?

If extinction-level events do occur and life increases on the upswing after said events what is the ratio of destruction vs creation? How many times can a planet be hit and keep on swinging?

We know Earth has taken five hits and in 3 billion years produced us. Does this mean that the garden would be torched more times to achieve intelligence or less? And if more how many more times?

Each extinction-level event doesn't just sweep the board clean it rearranges the pieces. Imagine a game of chess where every five moves half the pawns become queens, half the queens die, rooks turn into checker pieces, the king may or may not explode taking out everyone in a five-square radius and knights turn into kings or chickens.

Compare that with mammals taking over the roles that dinosaurs had for millions of years or the way birds in South America hunted small horses just two million years ago. Nature shuffles the deck periodically and it becomes impossible to tell who will become a king or who will be discarded off the table.

Can a species endure mass death not every 250 million years but every 25, 5, 1 million years, or would this strain credulity? Can a garden recover after being torched a hundred times in a hundred years?

And this does not even address the more fundamental issue; what happens if an intelligent species does endure but its essential lynchpin does not?

Humans are an intelligent species, more or less. But humans form a coalition of other species all working closely together. There is great evidence that dogs have been with humans for at least twenty to fifty thousand years. Cats not as much, but cattle, sheep, guinea pigs, pigs, even ticks and mites and certain bacteria all form part and portion of a total sub-ecosystem made by humans through animal husbandry and alongside humans in the form of gut bacteria, follicle mites, etc.

Dogs and humans are easily the closest bond, even closer than our bacteria since we like, and are like, dogs. The inclusion of dogs in human habitation and their domestication has had a profound influence on human existence. So much so that infants and toddlers will go toward dogs, and that is an astonishing thing to think about.

Toddlers see a large animal with sharp teeth, and claws, usually though not always twice as big and normally their response is to go toward it. Simultaneously dogs are notoriously protective of infants. Not in every case but generally as a rule leaving a toddler with a dog is safer than leaving a toddler with a wolf and dogs and wolves are separated by only a thin margin in terms of time and biology.

Is it perhaps possible that extinction alone does not lead to a higher percentage of survival but extinction coupled with the cooperation of the winners?

But why? What is it about dogs and humans for example that has become such a bond over the last fifty thousand years? Both species appear specifically to have nothing in common; one is bipedal, the other quadruped, one has access to technology, the other doesn't, one is a predator and the other . . . is also a predator.

Is there something about being a predator which makes organisms work together or become stronger?

Hunting requires specific types of intelligence; one must recognize patterns, understand and empathize with the behaviour of others, coordinate multiple efforts to a single end and problem-solve at the moment, changing strategy second by second if need be.

It has already been pointed out by others that perhaps all intelligent life out there could be predators like humans, and if so this itself could explain certain difficulties with finding life.

Extinction-level events though rare are devastating. Humanity has emerged stronger today than 250,000 years ago, and yet our capacity for violence has increased as well. It was pointed out previously that it is unlikely for all other life to be self-destructive or suicidal, a point I consider to carry on in this argument.

But if only predators emerge as the dominant lifeform would that not mean all other life must carry within them the seeds of absolute violence and cruelty? Would this not make communication all but impossible?

And yet, humans domesticated animals.

Why do this? A predator species, a hunter species would not seem capable of working with the animals one hunts, nor of raising them, yet humans do. Humans have been raising animals for thousands of years, potentially tens of thousands, and we as a species have grown stronger as a result.

Why is this so?

Dogs and humans have influenced each other's evolution ever since both species came together fifty thousand years ago. We have changed them and they in turn have changed us. It has reached a point where puppies are instantly seen as cute by humans, and yet no other hominid in the wild does this.

Alone hominids and great apes are remarkable, both for their intelligence but also their cruelty. Chimpanzees in particular are known to be especially brutal organisms, and while gorillas and bonobos are much less dangerous the primate family is known for an excess of aggression.

They are also known for lacking the kind of intelligence humans do.

We have no evidence of domestication before fifty thousand years ago, but I suspect that the domestication of dogs may have happened much earlier than initially supposed, perhaps as early as 100 to 150 thousand years ago.

If so the emergence of certain human traits we consider uniquely ours might be the product of dogs. This is only a supposition. What is known is no man is an island, he is an ecosystem, composed of bacteria, mites, etc, each of which co-evolved with humans, changing them as well.

It can be argued succinctly each act of domestication has changed humanity so profoundly that a man or woman from 250,000 years ago if transported to our time would not only be an anachronism but as far removed from us as we are from Neanderthals.

And I do not mean this in turns of either intelligence or appearance. What I mean is humans after domestication acquired various immunities to disease, became more adept at understanding the psychology of other animals, developed tools and technologies specifically aimed at said animals and in everything from agriculture to war created an alien world someone from 250,000 years ago would find staggeringly confusing and alien in the extreme.

Let us return to our observer now.

Our observer can see other individuals spread across the plain, each individual harder to spot further in the past or obscured by trees and mountains, but let us imagine our observer is suddenly given the capacity to watch another in real-time.

By zooming close he or she can note bacteria crawling along the skin of said individual, but only one type? Life is not uniform after all and it is inconceivable only one type might be noted by our observer. No, he or she sees more, much more.

Sees everything.

Now, at periodic intervals said bacteria are hit by a storm, a storm which exterminates some but not all. If we return to the metaphor of the garden imagine milkweed and roses which in the current arrangement need each other symbiotically to survive. The storm hits and suddenly the milkweed all dies out leaving the roses alone.

Somehow the roses do not die out themselves but now their capacity to endure, survive, grow and change has been cut in half or stalled. Meaning they won't be able to adapt and they will die when the next storm comes.

But more than this, before death whatever advantages might have been conveyed by both species working together are gone. The roses may be intelligent but without the lynchpin, the secondary species to help boost them

aloft they are now running at a fraction of their original strength and any gains are now cut by half.

This is the crucial element ignored in 3.

It is possible that intelligent species weather extinction-level events well, even surpass other species and thrive. But humanity is not a singular intelligent species. We are the product and confluence of dogs, sheep, and even mites whose function prevent more virulent strains from infecting us.

Interactions between animals and humans have caused human intelligence to increase and made us different from our ancestors. Just as we domesticated and changed dogs they domesticated and changed us. A man from the past before the friendship of dogs would look human but it might be easier to communicate with a dog than him.

Temperament is a product of evolution and certain temperaments produce certain ends. Part of our social nature may come not from our evolution alone but from canines, and if so any world where secondary intelligence does not develop, where the equivalent of dogs is not found may help explain why intelligent life there has not sought us.

They don't know there is even the possibility of other intelligences in the universe.

Periodic extinction is a very good possibility but I would add extinction may spare an intelligent species and still ruin it anyway, for all time to come.

This, both points are a real possibility.

4) Intelligent civilizations are too far apart in space or time. And

5) It is too expensive to spread physically throughout the galaxy.

Now we come to the obvious points. Tying into the previous idea that intelligent life may not know other life exists it is also conceivable the distances involved are too great and other life simply gave up.

But why?

Why would life not want to explore or leave its parent world? There are issues to reach later, questions of if it is possible but let's assume it is; why then wouldn't someone want to explore if the possibility *is* present and the rewards a rich certainty?

The key issue though is *if*.

Let us return to our plain and our observer.

He or she can note other beings, other individuals positioned about the plain. He or she can see there are a great many. Let us assume our observer cannot magically travel from place to place but must walk. By the time one reaches the nearest other, said other is gone or dead.

If this step is repeated, or, let us say not dead but so irrevocably changed in countenance, appearance, and emotion as to not be the person one saw when they first began walking, would such an individual continue their stroll or stop?

Extrapolate if everyone were walking around the island continent, each person shifting and changing and moving and spreading; in fact, since I am using the argument that each individual is a world let us say their "ghosts," their thoughts pass from individual to individual, since thought is the mechanism by which travel is possible. Through said thoughts, said "ghosts" are still moving no faster than light.

It would be a cacophony. It would create chaos. But travel is still possible, and in a galaxy as vast as this one would not any one species try?

The question is though, try what?

No one has explained exactly what a sub-light-engine ship would entail. How big is it? How powerful? This is not a leisurely stroll, this is building something to last over a hundred thousand years, without flaw, to reach a destination inconceivable, to achieve an end unknowable, sacrificing thousands of generations on a gamble.

I'm not saying a species wouldn't do this, I'm saying if they did, knowing these odds the simplest explanation for not finding them is because such vessels might have been destroyed long before ever reaching their destination.

And why reach another destination anyway?

This is not an idle question.

If we return to the issue of extinction-level events, ironically enough, a pattern becomes clear. After a major extinction event life scrambles, resorts and grows stronger. Would most life be capable of leaving a world they are suited specifically to dwell upon?

Am I arguing then that intelligent life would never leave their parent world?

No.

If we imagine the plain and we imagine the individuals many are grouped together, small solar systems of communities, and we know most star systems contain the orbits of multiple worlds.

Imagine small rooms in a building; one may cross from one wall to the other but if the door is locked exiting the room is impossible. Perhaps the costs of exploring the galaxy are beyond credulity but species can explore other planets in their solar systems.

If true then observation of a single world is pointless. One must be able to observe each world in the system accurately to gauge if intelligent life exists there. If true then the barriers between systems are too great but the barriers within systems are reachable. As such one does not observe another; they observe the multitude in total clustered about a star.

Or . . .

I hit upon a novel idea a few moments ago; what if Fermi's paradox is backward?

What if most worlds have life and most life is intelligent? I don't mean one or two species out of the total of the biomass of a world. I mean what if most inhabited worlds contain twenty, thirty, or even two or three thousand truly intelligent forms of life?

And when I say intelligent, I mean tool building, I mean structural creation, I mean mathematical and higher reasoning. What if science fiction hit it right the first time, fantastic planets full of astonishing creatures most of whom are alien but intelligent enough to communicate with Earthmen?

But how does this influence or alter the paradox? Wouldn't this mean we'd find life even faster than before?

In a word, no.

Humanity is one group of at least twenty or thirty hominids which emerged over several million years. It was conceivable or assumed that humanity won the struggle to survive by wiping out Neanderthals and others but now we know this isn't true.

Human beings possess Neanderthal DNA and other hominid genetic patterns have likewise been found. It is therefore reasonable, and obvious, to conclude sex occurred and reproduction was successful.

Instead of humanity merely wiping out their rivals they had sex with at least two or three of them and this is crucial to realize. What if intelligent life develops all the time on multiple worlds, multiple intelligent species constantly developing and growing and interacting together?

How does this explain Fermi's paradox though, assuming I'm right?

Imagine our observer noticing someone else far away who seems to be talking to him or herself. Rather intently I might add. Would said individual notice our observer?

Humans form a single connected species and have waged war, conflict, intermarried, inter-divorced, had duels, massacres and country music. All changes and infinite variations though within the human form from the genetic level are superficial. There is no difference in either intelligence or biology between a Xhosa born in South Africa, a Canadian whose ancestors dwelled for centuries in NB or PEI, a Londoner whose ancestors also dwelled there for centuries or a woman from Beijing.

There are minute deviations but intelligence and learning capacity are indistinct one to another.

Now let us return to my point about dogs.

Dogs and babies interact all the time, both species having influenced the other. Puppies and babies, despite being vastly different in biology act the same, have the same overt personality and seem to understand each other very well. Life influences life.

Dogs are relatively intelligent themselves but not as intelligent as humans, and yet dogs' survival has depended not only on humanity but on the innate traits of the dogs themselves. Ergo intelligence is not the fundamental attribute, it's the secondary attribute to the thing upon which life survives.

I mentioned temperament. The temperament of dogs and humans is synchronized; both have hierarchies, both defend their young, both are predators, and both can learn. And both are capable of both vengeance and forgiveness and here is the touchstone of the entire piece itself.

For it occurred to me that forgiveness is itself an act of intelligence. Why does forgiveness fit into this?

Cooperation depends upon the capacity of mercy toward others, toward the idea that one can forgive. All complex social orders depend on the acceptance of mercy and forgiveness, forgiveness of error or accidental insult,

to survive.

How does this tie into multiple intelligent species across the universe? And what does it have to do with us?

The first concept was it is the nature of intelligence to destroy itself. True in some cases but on an evolutionary level seems ridiculous. Two, it is the nature of intelligence to destroy others. Again, the costs outweigh the potential benefits. Three, periodic extinction level events destroy everything naturally. More probable but if Earth is the template for this supposition each extinction-level event caused humanity to emerge, meaning intelligence was tied to destruction upon a global scale.

Then two more, life is too far away or travel too expensive to matter. Both are probable, but now I think I've hit on something close to these ideas but much more creatively satisfying; extinction-level events may create *multiple* intelligences at the same time.

Suddenly we have several intelligent organisms all vying for control. Now in some cases extinction of one or more groups happens, but even on Earth, it was just as likely interbreeding occurred so arguing intelligence always destroys other intelligences outright isn't even true here.

So, when confronted by multiple intelligences what happens? If a species is predatory and devoted to what I would call a revenge ethos, retribution ethos like those of social insects, and if all other parties involved had this same mindset extinction could occur.

But if forgiveness or empathy was the primary motivation extinction would not occur, most likely, unless by natural means. Intelligence is not a gauge of itself or its survivability, the emotional quotient of intelligence is. Let me repeat that; intelligence on its own does not equal survivability, emotional quotient matters.

Therefore, forgiveness and revenge are two fundamental attributes of Fermi's paradox.

Humanity and dogs have worked together to achieve a common aim. How many more other intelligences would be able to discourse or work together? (But how would this explain the paradox? This is only one theory. I will have others shortly to examine other details of the infinite jest.)

It would explain not finding signals because said life would not actively be looking. Why are humans trying to find other intelligent life? Because humanity is alone. Why might other species not be looking? Because they are a community, a multitude already, because they already have the answer; life in abundance is intelligent where they are from. They aren't looking for us because they've already found each other. The barriers of interstellar space are irrelevant, they don't have to leave home because they have already found other intelligent life and so the driving efforts to seek beyond are used to see ahead, all working toward a common end.

No one screams in the dark when he or she is surrounded by their friends in safety. Companionship is the light by which several species might live.

Or, said as concisely as possible; aliens don't look up at the infinite void to find intelligent life because they can stare across a room and do the same thing there. They don't need to look outward. They need to look inward toward those intelligent beings native to their world. It is easier to see across the waters for a friend than look four billion years in the past on a world which by now might not even truly exist.

This could explain concepts 4 and 5.

6) Earth is deliberately not contacted. And

7) Earth is purposely isolated. And

8) It is dangerous to communicate. And

9) They are here undetected. And

10) They are here unacknowledged.

I have combined these five points because, in essence, they are all one point; Earth and humanity are being lied to by aliens.

It is not inconceivable to imagine this might happen. The first three points could theoretically make sense.

If we are upon the plains again and again facing our would-be murderer hiding would be the most sensible approach. But hiding implies one is seeking. By definition to hide from us implies a paradox all its own.

Let us imagine a species that emerges in the stars. Said species is terrified of other forms of life so they hide. To hide successfully they turn their entire planet invisible and as added fuel for their paranoia encase their own bodies in armour, impenetrable, invisible armour.

Millions of years pass while they wait for any potential rivals to die out. They do more, using their advanced technology they move their world to the event horizon of a black hole just near the edge, meaning they are at a position in space most space-faring races would avoid.

And then they wait. And they wait. And they keep waiting until they are safe.

The problem is, at their time of emergence all other life was already dead. They had hidden away literally from nothing except themselves and their fear.

Now, how might a species hide from something without knowing it is there first? By definition one does not hide unless being pursued and one does not know they are being pursued unless they are, you know, *being pursued*.

Also, why hide from Earth?

All five points postulate the same consideration, somehow Earth is so important entire species have actively avoided being detected by us, even though we could only have detected them within a window of time beginning roughly sixty years ago.

Isolating Earth implies the most radical and least realistic approximation though. To isolate Earth implies one can reach Earth which implies faster-than-light technology, which implies one can move anywhere they want, which implies a godlike race of beings is scared of us enough to tiptoe around us without ever being seen.

It would be the equivalent of a giant fifty stories high avoiding being seen by an ant. Not only is it difficult to attempt it implies the ant is somehow terrifying to the giant. The zoo hypothesis' chief argument is summed up as either this or intelligent alien races avoid species who are technologically less advanced than themselves.

This also however seems asinine.

But why? Let us argue the claim that mega-intelligent races exist, beings with ships as large as cities or even small moons. They crisscross the galaxy and are observable, concrete proof of life. What does this do to humanity?

Nothing. Why nothing?

Because humans with telescopes could have observed said spaceships hundreds of years ago, meaning said knowledge would permeate human culture centuries before we'd have the ability to do anything about it.

The idea of a prime directive is one of the most deeply fucked up ideas in science fiction and perhaps one of the most insulting.

It postulates the idea that species below a certain cut-off rate of intelligence are not advanced enough to deal with the idea of aliens and that any interference by a "more advanced" race is detrimental to said beings.

Except this isn't an alien invasion. This isn't thousands of ships on the way to kill us. This is noticing a passing generation ship which shouldn't even be capable of noticing us. Would humanity cloak their probes out of fear of accidentally upsetting another race they haven't met yet, don't know if they even exist or can't predict what, if any reaction, said probe will have?

It doesn't make sense.

Prime directives and zoo hypotheses both argue the same point; intelligence exists in an evolutionary tier and an advanced species can determine how intelligent another species is before they are let into the club.

Since humanity has influenced many species positively and negatively, species which are not as advanced as humans, it does not follow a hands-off approach coming from another race of beings.

But how do I prove this?

The other key points may provide a key.

The most extreme and conspiratorial idea is that the aliens are already here. This idea argues that other lifeforms have come and infiltrated our society and culture and that aliens walk among us.

Sure, why not, and then explain what Bigfoot had for breakfast. The problem with this theory is that at its simplest it's incredibly stupid. But why?

I could be wrong. Aliens could influence and infiltrate Earth, the whole idea of a cabal governing everything is possible. But why?

This is a crucial question because it forms the lynchpin of all conspiracy theories regarding alien beings. The idea of a masquerade is fine for science fiction but why do it for real?

If conquest is the idea, well they supposedly rule everything. If you have something, why do you want the same thing; if you have the world and want the world something is wrong with you.

If humanity is "not ready" this too makes the same point as before, of not being ready, but now we run into a recursive algorithm that could go on forever. Imagine there are intelligent aliens here now, reflective

shape-shifters able to appear as mirror copies of ourselves.

They are advanced and capable of travelling at light speed and they determine when humanity is ready to encounter them. Let us dub our first saboteurs/infiltrators Kikirren for clarification.

So, they can watch us and observe our behaviour waiting for the right moment when humanity is ready. Simultaneously another species with FTL technology is watching the Kikirren, deciding when to reveal themselves to them. They too are invisible and occupy portions of the Kikirren homeworld. Let us dub our second saboteurs/infiltrators Omejeica or Omesalijeica for clarification.

But, wait, there's more. They too are being watched by yet another even more advanced species who had occupied portions of their homeworld. These aliens have wormhole technology and Dyson spheres. I will dub them Aureldis-Soneh for clarification.

And finally, we have godlike aliens capable of doing anything they want. They too are waiting for the Aureldis-Soneh to reach their level and they are called the Hsia Yjis for clarification.

So, you have four species specifically waiting on the previous species to reach an arbitrary level of enlightenment while unknowingly waiting to be "enlightened" under the auspices of the species watching them. The observer effect is strong with this one.

It is conceivable alien beings could hide from species more dangerous, not from species *less* dangerous than themselves. This puts the concept in reverse; godlike aliens are elusive because they are waiting for others to catch up but for all anyone knows there are alien intelligences vaster and more complex than them.

Evolution is not a series of steps in a sequential pattern, it is a shuffling of cards and a tossing of dice. Evolutionary levels are just made-up concepts used in bad science fiction. In fact, for argument's sake, let's say the first race are cephalopods, the second an insect hive species, the third crystalline organisms and the fourth a super-intelligent race of gerbils. You'll notice one of this number is not organic and the most advanced species here is a mammal which is unlikely considering on Earth mammals came last. Could happen, but still, how do you explain the crystal gem?

Conspiracies depend on a lack of information to work. This is why government conspiracies are so easy to cast. Since governments by their very nature are duplicitous it is easy to imagine the government is doing more horrible things than it is because there is no proof either way.

So perhaps SETI gets messages all the time and hides them under government orders or perhaps our evil reptilian overlords decide the latest fashion. But here is the problem; what's the point?

If the argument is made humans aren't ready that argument holds no water.

When Wells wrote *War of the Worlds*, the most advanced beings he could imagine were the Martians. Heat rays and tripod fighting machines battled the British Empire to the ground and were only felled by bacteria.

However, Wells wrote his book in the 1890s.

By 1914 the Martians would have had a run for their money with our current technology.

By 1945 the Martians would have been curb-stomped into oblivion.

By 2006 we'd be nuking Mars.

From 1891 to 2006 humanity progressed enough to destroy a Martian invasion, crafted from the mind of one of science fiction's greatest geniuses. Science fiction itself as a medium is all about what is possible and with each generation what is possible expands, and what is expands right alongside it.

That said, any species advanced enough to travel space at FTL speeds is still beyond us. But for how long?

Consider what is implied by these five statutes; an alien race monitors Earth, noting our progress. At some point we are welcomed with open arms or the aliens are malicious and wish to remain hidden.

But humans advance and sooner or later we catch up to them.

Here's the thing; how would humanity respond to knowing another race observed them and lied to them?

If our observer upon the plains found out someone had spied on him or her, bugged him or her what might the response be? Deception implies a greater betrayal of trust than overt war because deception implies a lack of respect.

They may be here now but if so, that would make them very foolish. As for being invisible, unnoticed, species that could phase through matter, ghosts for example, again it doesn't make a great deal of sense.

One does not hide among bacteria to notice an infection. No more does one try to deceive bacteria while watching them under a microscope.

There is one last point though to consider; it is dangerous to communicate.

Possible, but dangerous for whom exactly, and also why?

Danger involves risk but Earth and humanity offer zero risk to any species capable of spaceflight. As for other races; that goes back to the duel argument I made earlier, and is already said.

All this is most likely correct, but I could be wrong. Still, the point of solving this is based on probability, not certainty. A set course is most likely the correct one, not the absolutely correct one.

Now again how do I prove any of this?

By psychology.

If roles were reversed would humanity conceal itself?

If our observer could see in all directions would the first instinct be to hide to expand, curl away or spread out? And would our observer spy on others or even *could* our observer spy on others?

This point is never really explained. Unless.

There is one point where concealment would make sense. Dark matter.

It is conceivable that dark matter itself could constitute a hidden universe intermingled with our own and if that were true concealment would occur as a direct result of being invisible.

This is speculation but let us say if the conspiracists have a point it has less to do with government corruption and more to do with the basic properties of the universe itself.

Again, if.

11) Alien life is rare. And

12) No other intelligent species have arisen. And

13) Intelligent alien species lack advanced technology. And

14) Human beings have not existed long enough.

15) They tend to isolate themselves.

Concept 15 ties directly into the idea of multiple intelligences I argued earlier but it was not an exact fit in the description so I'm adding it here now having already made my points regarding it.

As for the other points, these all address a similar idea; life is rare and intelligent life is even rarer.

Intelligence is so rare we are the first ones to have it. Except we aren't.

We know of dozens of other hominid species, indicating intelligence is not a one-off thing. Ergo concept 12 can be proven as wrong because if there are multiple intelligences here either there are multiple intelligences elsewhere or there will be multiple intelligences on Earth in the future.

If it happened once, it can happen again.

Concept 11 is impossible to prove any more than multiple intelligences on many planets can be proven. However, concept 13 can be proved.

Of all intelligent life here, only hominids have hands. Crows, dolphins and dogs lack hands, and while primates have opposable thumbs, they lack the command of fire needed to forge tools.

Therefore, there is a confluence of events at work here; tool use coupled with hands coupled with control and creation of metal or other synthetic substances. Why not imagine organic technology though? Thorn-barges perhaps, spiders producing threads to craft rockets out of, honey-pots designed to remove portions of their flesh as food, etc.

But organic technology, genetic engineering and such can only happen after inorganic technology is developed first.

It is possible intelligent life on most worlds lacks the exact metallurgy needed to build tools or lacks the digits or hands for the task either. But further, if intelligent life is rare there is another consideration to realize. Or rather two.

The first is the potential for immortality.

Immortality is the holy grail of many scientists and it is possible that if intelligence is rare immortality is provided for said beings. Why argue this? The conditions under which intelligence occurs seem to be proportional to the number of extinction-level events a planet goes through. But if there is only one intelligent species on another planet potentially only one extinction-level event might have been needed and we know of several species on Earth we'd count as practically immortal.

Lobster, certain kinds of jellyfish, and glass-coral, are all species with unimaginably long lifespans and though immortality would not lead to eternal youth it would provide a long time for an organism to develop. Now, when I say immortal, I do not mean incapable of death. No matter how immortal you are or seem to be you're still going to die in time since time's arrow runs in such a way as to eventually lead to the death of everything.

But lifespan determines society.

Imagine an individual capable of living for one day and perceiving of time as equal to a human. One day is insufficient time for any individual to learn anything. Let us have this same individual, this bacterium clinging to the body of someone who our observer sees.

If life is rare then the mechanism of change and death is equally rare, meaning our bacterium might remain unchanged in the eyes of the observer. In comparison, if death is common our bacterium blinks out of existence without even being aware of itself.

Societies change when one is given time to make changes to them. If life is rare or intelligent life rarer, it is conceivable that part of the reason we have not noticed them is because they are moving at a perceptual rate too slow for us to see. We might be as mayflies or less to them if they could see us as well. Time could be a factor in all this, dependent upon the definition in each one's mind or what fast and slow even means.

Now why argue death might not be an issue? That seems an odd leap to make; there's no foreshadowing of this idea and no scientists mentioned immortality as part of the paradox. But evolution is driven by two equal forces; death and adaption. Death is the risk, the potential endpoint of any species or individual at any time. Adaption is how death is avoided as long as possible.

Some species on Earth have proven to be potentially immortal, but not all species. Yet, all life by definition will die just as all individuals will die, which is an odd thing to realize when you think about it. Why introduce a limited lifespan into an organism so that it must at some point cease to function?

Death constitutes the endpoint, the final nail because any organism that cannot change will face something worse than death. Stagnation. Adaption in comparison is how death is avoided and without the risk of death or the use of death adaption itself is pointless and so nothing changes.

An immortal bacterium has no reason to adapt therefore no reason to change. How much more an immortal man. Now why is change important? Surely if one were immortal they wouldn't need to change and so wouldn't need to evolve? But no matter how powerful one is sooner or later even an immortal being must succumb to any number of potential outcomes which will doom them.

At some point, they might be incapacitated by something, stuck forever underground perhaps. Or something happens that even an immortal can't deal with; a supernova, meteorite, or anything large enough to upset the ecosystem. And the ecosystem itself may explain why immortality for all species is impossible.

One organism needing to sustain itself endlessly will strip any environment bare in no time. But let us imagine many immortal species unable to die. One can rip off a limb to eat it only now that said limb is inside you, alive and desiring to get out. Which it might even do successfully.

Death is the catalyst needed to turn protein and cellular matter from one organism's use to another. In comparison a species that can't die is stuck, unable to change, and if all life were like it, unable to feed.

But. Let us imagine for argument's sake I'm wrong, that some species could theoretically be immortal. Even if intelligent is there any reason for them to develop technology, search among the stars or do anything but lie in the earth or on the sand and sleep?

Immortality might make sense since death is itself an evolutionary development here. If life is rare perhaps it is all the rarer and harder to find because it is as immortal as a jellyfish and just as adept at tool use.

But as I said there are two potentialities here.

The second is what happens to an intelligent species over time if it is so rare.

Let us imagine our history, emerging first as small wormlike creatures in the Cambrian oceans, progressing through mammalian stages of life, growing, changing and then becoming us, only, again over millions of years of life to revert, finally becoming small wormlike creatures with vestigial limbs crawling under the grey soil when all the mountains have been worn away and all the oceans are pitch.

Is there a guarantee, if intelligence is rare, that said species will remain intelligent or do all intelligent species suffer the slow slide toward mediocrity now and then?

Now, why didn't I mention this point with the idea of life being in abundance? If life is in abundance, then

the ultimate fate of said life is irrelevant. If our observer notes a thousand people it doesn't matter if one or two of them become old and frail and hard of hearing. But, if there are just two people and one of them becomes old and frail and hard of hearing then the odds of finding companionship in the proper window of time is cut in half, or nil.

The logical companion step to the rare Earth hypothesis is that any intelligent species might not remain intelligent long enough to be contacted by us.

This could also indicate that indeed humanity has only been on the stage a short time since if life is rare perhaps worlds where life developed blazed and perished a billion years before Earth developed multicellular life. We know Mars had water and so it is conceivable original Martians did exist by old violet seas. If two planets had liquid water a billion years apart how much more likely other worlds have the same timescale; humanity could have arrived at the party a minute to midnight when everyone else left an hour before.

But what about the last point? Could humanity be the only intelligence in existence? No. But I say no because I'm not convinced humanity is intelligent now.

Let us return to our observer but now he or she is looking at themselves, noting the existence of an infection of which we are. What might he or she see? Humans are a hierarchal species given a bear's capacity for scavenging and an insect's talent for creating castes. This does not end well. (Why say bear and not wolf? Wolves are uniquely social while bears are solitary. A wolf does not function well alone while bears do and humans can work equally well alone in isolation. They have autonomy, coupled oddly enough with sociability.)

In an insect society, the individual is sacrificed for the whole. Insects are supreme masters of this. It is not uncommon for thousands of ants to sacrifice themselves to save the colony by killing just as many rivals. So long as the queen endures the colony survives.

Bears and other solitary predators however function in isolation. A bear, a crocodile, or a shark will hunt and kill infants of their own species. To them, the individual, their individual life matters more than the species as a whole and therefore will prey upon their own young if it suits their interests. Mind you, in these cases, predation is caused by the male.

Hierarchies in comparison are neither exactly castes nor solitary. A hierarchy works because multiple individuals are regarded as more or less valuable than other individuals, existing in the lattice framework of society as a whole. This differs from insect cultures and castes because insects are ready born, programmed to understand their role and act without oversight while hierarchies demand oversight constantly.

There is neither a general bear nor a general ant; one acts in perfect isolation, and one acts in perfect harmony with the group. Humans do neither.

If a thousand soldiers die in a campaign this is a tragedy. If their general dies in a campaign this is death. This is because a general's chief role is to coordinate all aims and means to one end while the individual soldiers' role is to carry out said orders to achieve said end.

Why does this system make me question human intelligence?

I liken human societies to chess and insect societies to weichi. In chess, the loss of all pawns does not equal the loss of the game, nor does even the loss of the queen, but the loss of the king is total even if no other piece is taken off the board. Sounds insectlike, yes? Except in insect societies, the queen is no more valuable than any other caste. In weichi the goal is territorial, the collective whole subsuming one's enemy. Weichi has no distinctive pieces one from another; all are equal here.

The problem is, in real life, it is just as likely for a pawn to slay a king on their own side as to be slain by an opposing piece. Self-interest can become a conflict with mutual interest and when this happens bad things occur.

Our observer would see bacteria slaying each other, not rival bacteria but those of one's own side or collective or "nation." In all these suppositions about intelligence, one point is implied and reiterated but never stated outright; the implication is that any intelligence would act in its own self-interest and collective interest and would be a single, homogeneous group. But there is no reason to believe that though.

I doubt human intelligence is the end-all state of being because human actions do not often seem especially intelligent. A species capable of betraying itself, of placing self-interest above mutual interest speaks of a lack. Now, does this mean life could be suicidal, self-destructive, etc? Went over those details first near the start of this dissertation. But if humanity is alone then the argument must conclusively be made not that there is one intelligent race in the universe but that there is *no* intelligent race in the universe, bar none.

A slight tangent I admit but it's mine and I made it. At any rate, all these points, all saying the same thing,

tie together to one issue; can it be the universe is currently empty? If it is then any attempt to find life beyond Earth is impossible. Paradoxically this means this empty universe is ours and so in time we will find alien life beyond the stars. That alien life will just happen to be ourselves.

As for proving this? One cannot accurately prove a negative but if the universe is empty and bereft of life outside of Earth what exactly does that mean? What conditions caused, not life to develop here but no life to develop anywhere else?

It's hard to know without going to another planet so let us just wait and see.

16) Humans are not listening properly. And

17) Civilizations broadcast detectable radio signals for only a brief period of time. And

18) Everyone is listening, no one is transmitting. And

19) They are too alien.

Each of these points constitutes one real idea, the idea that communication is slipping by even while those attempting communication still exist. Unlike the previous concepts it is not that life is either rare or plentiful but that life either communicates differently or communicates in like manner for only a short time.

Here too is where the alienness of life is allowed to shine.

Intelligences vaster than ours could literally be bacteria, hive-mind swarms who communicate using patterns of luminescence, or life could exist on a world without a sun rendering sight impossibly useless, making even the notion of other worlds impossible to verify.

Intelligences could communicate using scent or touch, making radio waves useless, or species could switch gender or even form at will, even existing in a purely gelatinous state composed of a single multi-varied community of consciousnesses.

There is no upper limit to what is possible as long as it is unknown.

Just as likely all species are listening but none are talking. This is not tied into the previous idea but is still a possibility. Proving this is difficult but ultimately irrelevant. I say irrelevant because if this is the case it too is impossible to prove as one cannot conclusively prove someone did not do something or was not even there.

However. There is one last concept to add which dwarfs all of them both in craziness and in possibility.

20) Inflation Hypothesis and the Youngness Argument.

This, out of all of the potential explanations for Fermi's paradox is both the most fascinating and the most mind-boggling. It states that since the multiverse exists new universes are being created constantly. Therefore, young universes outnumber older universes by a factor of $E10$ to the 37^{th} power for every second of age.

What does this mean?

Let us return to our plain and our observer.

Our observer can see in all directions and can view other continents, far-off islands, etc. And notes although there are other individuals, they are all dead, or, to put it another way, were never alive to begin with. Unliving matter circling lampposts, uncomprehending and never-were.

Our observer however also has a magic mirror able not to see this reality but all other realities in turn. So, each second in viewing said mirror a new universe is revealed, and in each universe we have again an observer, who, because he or she is there to observe one universe is the *only* observer in said universe because by definition when there is one there cannot be another.

It's an intriguing theory but then I have to ask, where are all the trans-dimensional aliens? If each universe contains one intelligence rather than seeking out life across the stars one would have to seek out life across the multiverse which is frankly speaking no more complex than journeying to another star system.

A species capable of faster-than-light travel should have wormhole technology and if so, suddenly the multiverse is open to them. So again, I ask, where are they?

If our observer had a magic mirror able to see other continents in place but not within the boundaries of this universe, why couldn't he or she go there? Perhaps other universes are not hospitable to life; gravity or energy might be alien, but again in an infinite multiverse coupled with an infinite universe why wouldn't we find at least one other species capable of finding us?

However, perhaps this more than anything else, explains everything.

There are over 7 billion humans on Earth of which no two are alike, not even identical twins completely. There are a hundred billion different forms of life on Earth.

There have been 108 billion human beings in our history and there have been untold billions of lifeforms existing on Earth before us.

There are 100 billion stars in our galaxy.

There are 100 billion galaxies in our universe.

Each individual contains 37.2 trillion cells. Each individual in a lifetime encounters thousands or tens of thousands of other individuals. Now in the sheer infinity of a single life, one individual is the direct product of all that came before it so the 7 billion here now owe their existence to the 100+ billion who came before.

In the infinity of the universe, any intelligence itself must come from whatever came before it and be influenced by it in turn.

Perhaps that is the difficulty of the paradox.

The larger the ratio for life the greater the assumption one will find life. However, the greater the number of space-faring species the greater the infinity of travel, number of worlds, etc. As the number of potential life-bearing worlds increases, even unto infinity, it is still less than infinity, and since infinity is the yardstick by which it is being measured it can never catch up.

In a single city, it is practically impossible to find someone to talk to even though thousands live there. The larger the number of people the less likely one is to contact everyone. In comparison, if there are two people in an empty city, the odds increase they will be noticed by the other, at least once, assuming they are both out in the open.

The Youngness Hypothesis argues life can only occur once but what if life occurs constantly and the simple problem is we are lost in the crowd, our voice drowned out in a cacophony we ourselves are not aware of? And why mention the number of cells in a body? Each body is not an individual but a collective, billions of cells working together, striving, dying constantly. No one is one, rather we in the singular are many.

Would you notice if a skin cell died? Or a blood cell? It is the complexity of the biological organism which conceals the individual nuances of the one. The greater the number of things the easier it is for those things individually to be lost.

So, as one seeks life, the more they seek the further out they look, but the further out they look the more they find, but the more they find the more they seek to look for, and yet since the universe is infinite the harder it is to successfully achieve the goal because by definition the only way to do so is to find something anomalous in an infinite space. If life is infinite and finding life is possible and space is infinite then the attempt to find life cancels the attempt out.

Potentially.

Think of it this way; life is L, space is S, Observation is O and infinity I.

If L is infinite and O is less than infinite, we should find life because in every direction L exists. If S is infinite and L is infinite and O is less than infinite, by definition we cannot find life because L and S cancel each other out; the greater the number of lifeforms and the greater the vastness of space the easier it is for L and S to cancel each other out, once I is taken into account.

The life of the universe might exceed our understanding, proving itself everything and still be utterly impossible to find since the scope of the territory recedes each second we look at it. I admit I'm mentioning this concept identically in different ways but it is an intriguing concept to consider; the only way to find L is either if it is extremely close or greater than infinity.

The more one looks for others the more the universe infinitely slips out of our grasp.

But, back to the Youngness Hypothesis; realistic or not?

It would be easier to prove if life is here than life is elsewhere in the multiverse but ultimately it is irrelevant since we can't cross the trans-dimensional barrier and find out.

Yet.

Alright, here presented are all the potential reasons for Fermi's paradox.

Now, how exactly do I solve it?

No. Not yet. First, let's provide some of my own solutions and then go from there.

1) The Babel Paradox.

It occurred to me that out of all human inventions, the concept of written language is perhaps the most important and greatest in terms of output-to-input ratio. In other words, in an ideal thought-curve, each subsequent generation would improve upon, rectify and streamline any previous thought, leading to a singularity of invention.

However, this has not happened.

Religious texts like the Bible and Quran are used to justify all manner of atrocities and evil and because both texts are set in the past and deemed irrefutable divine guidance questioning either book is seen as sacrilegious.

I am not disparaging either Christianity or Islam. I've done that plenty of times in other essays and don't have to do it here, Christianity especially. The issue is not the idea of religion, it is the idea of information stuck in amber, petrified and never allowed to be questioned or changed.

If a text or idea is deemed unchangeable and divine as more time passes said texts become less and less reliable until they become useless and ultimately discarded. This is as true in Taoism, Buddhism and Sikhism because all such texts are deemed irrefutable and unchangeable.

This is where things get interesting, because pagan beliefs continue to survive as well.

Isis, not the idiot terrorists with the lifespan of a mayfly but the actual goddess, is still worshipped, as are Zeus, Apollo, not to mention Satanists who revere the devil. Why mention them? There is no Greek holy text and although there is a satanist Bible there is no single branch of Satanism either.

And this doesn't get into debates over superhero heroes, Sherlock Holmes, Tarzan or any number of fictional characters who have embedded themselves in the public consciousness, the racial gestalt.

Each generation produces more information than the previous one and yet each generation is influenced by the previous one as well, so when certain books become embedded in the public consciousness people become influenced by individuals who died, in some cases, thousands of years before.

Now why call this a paradox? If each subsequent generation knows more than its parent and if each subsequent generation must still square the circle, and try to treat previous knowledge as untouchable and pure how then can new knowledge take its place in the public consciousness?

The more one knows and the more information one has the more likely they are to know less if they are trying to access all previous knowledge and regard all past knowledge as unchangeable and perfect.

Let me provide an illustration of this based on my knowledge as a writer.

I have read many books of which several influenced me. *Martian Chronicles* is one, Pauline Gedge's *Stargate* is another, and M. R. James' ghost stories are a third. Now Bradbury is a beautiful, lyric writer but in his cosmology, it is the nature of mankind to destroy others and themselves. If the man were asked to explain Fermi's paradox, he would most likely answer with the idea that a species like humanity was out there, either dooming themselves or others. For Bradbury nostalgia is a fundamental function of what it means to be human and the idea of new technology is anathema. Writing in the 1950s he envisioned television as being too intrusive; how he would have regarded the internet as hardly a positive thing is not surprising.

One can enjoy the man's prose and his lyricism, but this does not mean one should wholeheartedly love every conception he has and I consider *The Martian Chronicles* one of the finest books I ever read.

Gedge's *Stargate* is about fatalism and the loss of innocence, again told lyrically but for someone like myself, such an ideology rings hollow. In my nature nostalgia is itself anathema and a golden age abhorrent.

And James and his stories, to quote his introduction, is a world where sex is not. Were one to base an ideology on James' stories the world is one in which everything seems nice but beneath the surface, terror lurks.

And I haven't even started with Lovecraft, a man whose racism and sexism were extreme in the 1920s and yet whose ideas regarding deep time, and alien gods have influenced millions of people around the world.

Why mention writers and fiction?

No one worships Ray Bradbury. They may revere his writing but no one regards him as a god and he never regarded himself as a god either. The same with Gedge, James and even Lovecraft. Stories and poems have influenced humanity for millennia, human imagination is fired with visions of Mars, haunted cemeteries, alien worlds, and savage deities, but this is pretend, playing, and unreal.

The human capacity for play and imagination is one of our chief attributes and has allowed us to dominate the globe. Crucially though, once an idea becomes seen as truth, inviolate and unmovable, no longer is the idea allowed to change but the world must change to accommodate the belief.

And as knowledge increases the number of mistakes in knowledge increases as well. This is not a problem so long as one considers knowledge as changing, but religious texts, scientific texts or medical texts which are revered and worshipped cannot be changed and so, despite more knowledge being created, knowledge stagnates as a result.

And this does not address the concept of metaphor or simile. There is a belief that the Bible was never to be taken as literal truth, that all of it, all of the Old Testament in particular was meant not as history but wish-fulfilment or metaphor, the same way the idea of the Trojan horse is Homer's idea of how the Greeks won when in actuality all evidence points out that they lost.

If the writers and readers of the time regarded the Bible as allegory and myth and subsequent generations tried to square the circle and regard them as truth then the entire enterprise was doomed from the get-go. Consider that.

And this does not even get into mistranslation. The classic cliché of 72 virgins could be raisins, or figs in the original Arabic, and the Bible, The Tao Te Ching and others all are products of language which have changed or died in the last couple thousand years.

Now why does any of this matter?

If intelligent life exists, if worlds have life which can communicate upon them, regardless of anything else they must have a capacity to share and store information because otherwise, technology is impossible.

Let us say each generation is the equivalent of ten years on Earth; a being is born, lives and dies in one decade. Let us say writing or some equivalent means is developed one thousand years ago.

Now if knowledge were to double each generation by one thousand years any species would, theoretically, be as wise as a nonexistent god, but, paradoxically, as knowledge increases past knowledge has not abandoned the stage.

Humans knew they were the centre of the universe. Humans knew the world was six thousand years old. Humans knew diseases were caused by bad air and not microbes. And humans knew when they died, they were sent to heaven, reincarnated, etc. These beliefs influenced their behaviour, the last one especially. Being told that when one dies, they would be given paradise, is a concept which was originally used to send willing people to their deaths while those who argued such ideology often stayed at home, safe. Martyrdom is not evolutionarily sound but of course, evolution itself as an idea is only a century or two old.

As each generation gains more knowledge they are subsequently dealing with past knowledge, either discarding it or revering it. The more they revere it the more they cling tight to it the harder it is for new knowledge to be given its rightful place and encouraged to grow.

This is why fiction is often more fluidic and useful than religion; since fiction is not considered absolute in its beliefs one is allowed to play, experiment, and grow. This also means that intelligence, if it is to survive, must have as its primary occupation the idea of play, creativity, imagination and storytelling.

Intelligence must be capable of telling stories because stories allow the imagination free rein to experiment which is the precursor to science. A logical sequence of events is at the forefront of storytelling. The danger comes when fiction is confused with fact. Beliefs which are not questioned are beliefs not worth having.

So, if true what does this mean?

A species must be capable of solving the Babel paradox before it is capable of achieving interplanetary communication. A species might need to reach a point where fiction and religion are finally considered the same thing because otherwise said intelligence cannot progress beyond a certain point or achieve anything of lasting interstellar value. Does this mean religion is evil? No. It just means religion, like stories, should be given the right to be mocked.

Is there any other possibility?

2) The Literal Paradox.

If the first idea is that a Babel overload could preclude new knowledge from developing in sufficient means to progress a civilization, what if one had intelligence but lacked creativity? Is it possible for an intelligent species

to possess human equivalency without human creative agency?

In other words, could an alien race be literal-minded and incapable of imagination?

Now why would this solve Fermi's paradox? Fifty percent of our technology is derived from science fiction, everything from automatic doors to cellphones to nuclear submarines exists because someone put them in a story first.

One did not first invent the technology and only after imagined its use, one imagined the technology and only after developed its use. Perhaps the secret of human malleability lay not in our concrete awareness so much as it is in our capacity to play, and if so, the reason we haven't found aliens is obvious; they have not imagined ever leaving their world because they have not done it yet.

Hence the paradox.

The only way for an intelligent species like this to develop is if they have a concrete technology made but the only way in which a concrete technology would have to be made is if they created it first.

If true intelligence is common. Creativity is rare. And since human agency depends upon imagination, we might find ourselves the only species capable of leaving our homeworld simply because nobody else thought about it first.

It would be a supreme irony if Wells and Verne were not only the fathers of science fiction but that rarest of all breeds, absolutely correct. One uses fiction to learn about, explore, and develop in the real world.

I solve it by considering four points.

1) If we are observing worlds in the past, is it reasonable to only look for worlds orbiting suns like our own in the search for life? Perhaps we should be looking at worlds which are either too young by our estimates or perhaps too old.

Now why do this? Imagine a man at a train station getting aboard a train, passing someone standing still. From the perspective of the passenger the man at the station is passing away but from the point of view of the one at the station, the passenger is fleeing away.

If we couple this with time both observers are seeing things from the past, meaning for all the stationary man knows the one he bumped into is already long gone. So, to know the man was there we don't observe him now or after but before; we attempt to see the man *before* he arrived.

Esoteric I suppose but I theorize in trying to find worlds like Earth we are doing a disservice to life itself.

This means looking for worlds by red giants, brown dwarfs, by suns which on paper would be too old, too insufficient, etc. This is especially true in the case of brown dwarfs for the second reason.

2) Humans have proven life doesn't need sunlight to survive; bacteria can live quite well in the dark as can other species. There are many more brown dwarfs than any other kind of stars and the detection of a planet around a brown dwarf is infinitely easier. Therefore, we have two criteria to make detection easier now.

But why focus on a star so unlike Earth's? Brown dwarves have a singular edge that is not readily apparent; they are alien. Any world orbiting a brown dwarf exists at the opposite axial position of anything we could understand. Ergo any sign, even the faintest of life here increases the odds of other inhabited worlds exponentially.

Brown dwarfs could provide the best evidence of interplanetary civilizations. It occurred to me that human beings have sent probes to hostile environments like Venus; any species capable of space travel in a multi-planet system would have to leave clues not on their homeworld but on the worlds they themselves colonize.

Imagine a fleet of ships in the high orbit of Venus; these vessels by their very structure would have to influence the atmosphere of the planet. It would be a telltale sign of life except we wouldn't be looking at their homeworld but an inhospitable world they would be trying to inhabit.

How do brown dwarfs fit in? Any species in such an environment would be alien by our reckoning and any intelligent species capable of leaving their world for other worlds would be distinctly more noticeable than in a larger system. It's unlikely but it's not impossible.

3) The argument crudely made, that because there is life here there can't be life anywhere else, has to be considered unlikely on the face of it. But why? The concept argues that our existence precludes another but this

implies our infinite universe is affected and influenced by a handful, relatively speaking, of individuals.

If true, as a consideration would we be able to prove or disprove Fermi's paradox by the creation of an artificial intelligence? After all a truly intelligent machine needs no water, no oxygen, no protein, and doesn't sleep or reproduce sexually. Can Fermi's paradox be better understood if we prove life can be created without any biological or organic means?

4) What exactly caused the atmosphere on Titan and Venus to form? What mechanisms led to an atmosphere in the first place? We know gas giants exist and, theoretically, life can survive and endure there. Perhaps it is not water so much as air which determines the potentiality of life.

Now, as a final point what worlds would I imagine could be life-bearing? Unlike everything else this postulates me arguing a specific world or worlds, even though, and this is crucial, despite all abilities at observation it's difficult to tell if a world even exists. Not that other planets are there but if the exact postulates as revealed are actual.

Remember we are looking in the past so even a civilization which is only fifty years ago, even a life-bearing world from half a century ago might cease to exist by now if any intelligences there decided or had the capacity to kill their homeworld.

If I had to focus on a single planet to turn my attention to I'd choose Gliese 1214b, the so-called "water world," but if I had multiple chances I'd focus on every brown-dwarf system within four hundred light years. If I had two choices, I'd pick also Gliese 581c.

I'd look for any indications of activity on nearby worlds, something definable by our understanding, a ship, etc. Failing this, assuming I'm wrong, I'd focus on each of the worlds supposedly deemed potentially habitable, with one exception.

HD-100546B.

This is the largest planet currently detected, orbiting a star near the end of its life cycle. By all rational logic, no life could dwell there. That's why I would look there first. Life is confusing and suppositions about what is or is not possible on life-bearings seem, by comparison, simple. But we know most of Earth's history life as we know it either didn't exist or couldn't survive here.

To find life perhaps our first step is to find whatever is our most deeply ingrained opposite and go from there, because if we find life there and here suddenly all subsequent worlds are in a band between these extremes and paradoxically the potential for life explodes exponentially. If life can survive hell such as we imagine it life can survive heaven too, also such as we can imagine it.

Anyway, these are some initial steps. I'm adding a few essays from earlier that deal with Fermi and xenopsychology and then I think I'm done with this. Life has a funny way of working itself out sometimes.

A GANGLIONIC SUPERSTRUCTURE IN RELATION TO ALIEN/HUMAN COMMUNICATIONS

I was considering the ramifications of xenopsychology when it suddenly occurred to me how a highly developed non-humanoid species might interact with us.

According to some, invertebrate life is composed of individual sub-brains, each controlling a small part of the whole, leading to an organism with a highly fixated and preprogrammed behaviour. The thought came to me that such an organism could increase its intelligence if it combined elements of ganglionic and chordate physiology, i.e., each part of the organism is a separate entity of sorts with an overarching control brain acting as a higher self.

The individual sub-brains are equal to, or less than the total power of the over-brain leading to a creature with multiple intelligence levels. Such an organism would have definite advantages which are remiss in both invertebrate and vertebrate life on earth.

Invertebrates are preprogrammed entities. Social insects for example exist as individual castes; one could liken an ant colony less as a city and more as a brain and body equally divided among countless thousand, seemingly unrelated parts.

For this reason, insects, or social insects at least, seem to increase their intelligence the more of them there

are. The IQ of a social insect is dependent on the number of organisms in the colony amplified by the number of castes the colony possesses.

The drawback to such an arrangement must seem obvious to a vertebrate. In the mammalian and avian worlds, we are separate creatures, dependent on but not entirely subservient to each other. As such humanity in particular has developed beyond caste systems (for the most part,) but moreover has developed beyond hunter-gatherers into our complex and usually cosmopolitan selves.

However, the drawback to chordate life should be obvious to anyone homeless, starving or destitute. The same ability to adapt beyond a fixed form of intelligence has always meant that few human beings are in the possession to either have all they want or understand how to get all they want in a society where the individual matters but is also simultaneously worthless. Unlike social insects, potentially any human can do any job. As such the needs of all are not met even as the needs of a society are.

But what about a creature with a ganglionic superstructure, literally many smaller minds working in tandem with a larger, over-mind? Suddenly specialization and adaptation can occur simultaneously, the sub-brains performing autonomic functions while the over-brain can adapt and coordinate highly complex behaviour at a whim.

Now, how does any of this lead us to alien human communication? Because, if such an organism was, for example, a genius beyond our comprehension then its sub-brains might equal current human-level intelligence. Ergo a vast consciousness could use a small part of itself to communicate with us and through the use of this sub-brain we could understand just as the over-brain could without the complex needs of fully understanding each side.

Of course, this leads to the obvious question; what if no such entity exists? Ultimately that question becomes irrelevant because the thought experiment behind it does lead us to not only communicate with alien life but terrestrial life hitherto beyond our communicative reach.

Look at the ant colony again, only now imagine us trying to communicate with them. Humanity considers individual intelligence as opposed to the background intelligence of the whole species; insects are the diametric opposite.

Put two hundred geniuses in a room and they will not suddenly become magnitudes more intelligent than they were before. Human intelligence is fixed as regards population growth; more of us does not equal more intelligence for us.

But insects become smarter, are able to achieve more and act in a coordinated effort which is beyond human intelligence. We are a societal hierarchy which needs leaders and followers; insects have the ability to create order without the use of generals, leaders, etc. From that realization seeking intelligence with an insect for example becomes not the question of the individual but communication with the group as a whole.

Am I arguing that getting a bunch of insects together will turn them into a collective genius? Yes, but that does not mean they can communicate with us. Like I said invertebrates have preprogrammed intelligence and we are so young in comparison to them on an evolutionary level we are invisible to their understanding of the world, and more importantly their needs.

How then do we communicate? By reaching their level of course. If you inverse the equation of dividing a ganglionic superstructure using a sub-brain of itself to reach us what is to stop us from doing the same thing to a species which is entirely composed of "sub-brains?"

Now you may ask why bother, but think about it a moment. We share the same planet, the same basic needs, the same basic DNA and we can't talk to each other. Finding intelligent life is the hallmark not only of science fiction but also the holy grail of science. The ability to communicate with another alien species is the Bible of a new society, a new understanding of humanity's place in reality and of the place of whatever alien life we may discover. (Of course, they could always discover us first.)

The essay by Freitas proposed several interesting problems regarding logic, emotionality, intelligence and such, but what he didn't mention was the universalities of existence as a whole. Death is language. Sex is language and any organism which has survived has some awareness of one or both states of being.

So, if one can use these two points of reference and one can, lower seems like the wrong word, descend perhaps to the level of another organism like a social insect then the realization of Eros and Thanatos must become the stepping stones toward any communicative approach.

And if one can communicate with a social insect successfully one can communicate with many other forms of life, other mammals, avians, reptiles, etc. The question is why bother; what could a dog teach us for example, a house cat, a gerbil or a cockroach? An awful lot when you come to think about it.

Humans communicate in two distinct ways, through action and words. The creation of literature, of an auditory or visual engram being used as a metaphor or indicator of something not obvious or seemingly at hand is an essential human trait. These words are a product of a distinctly human mindset, transforming random lines on a white surface into ideas and concepts and the process of doing this is, as far as we know, unique to humanity so far.

So, simply put, how the hell do the other billion strong forms of life communicate? Insects use pheromones, dolphins and whales use sonar clicks, and other species use head nods, and change colour to indicate mood, personality, desires and most importantly ideas.

I have spent my life concerned over the threat of my ideas being lost, which is a human fear I suppose, the recognition of one's base mortality. Insects are hundreds of millions of years older and have developed means of communication as sophisticated as our own. From a purely practical standpoint the more means of communication at our disposal the more intelligent our own species becomes.

Returning to my earlier statement about a ganglionic superstructure; imagine a world populated by hearts, ordinary hearts, fully sentient, fully aware, given some sensory organs we can't comprehend yet. How do we communicate with such a species? By our heartbeats. The human heart is a product of and reaction to all emotional and biological stimuli and in a world where a single organ of us translates our moods, and our nature to another species we also can understand and begin to translate such an organ backwards, further indicating more about ourselves.

Now amplify such a position on the whole totality of life on our world. Olfactory systems used by insects and dogs, changing colour patterns used by chameleons and octopi, suddenly communication grows from two methodologies into a multitude and for each new method of communication we gain also a new recognition of the diversity and intelligence of all life on Earth. Even plants.

Now, I have neglected the technical details of such an undertaking simply because I am not currently aware of how to descend to another level of intelligence. Unlike my thought experiment human beings are not composed of sub and over-brains. However, our technology is.

The goal of a universal translator has been the dream of countless science fiction writers and endless numbers of scientists, linguists and anthropologists throughout history and around the world. To date, translation matrixes exist which allow a piece of literature or a spoken word to be recreated and reiterated to the previously ignorant person who lacks knowledge of said language. (Note I mean ignorance in terms of lack of knowledge, not lack of intelligence.)

Perhaps my thought experiment could be used in such a way to decrease our intelligence by proxy and then translate the "words" of another species into a method compatible with us. Perhaps not. But this is a possibility that has not yet been fully explored or considered and I believe that it should be.

COMPANION PIECE TO XENOPSYCHOLOGY

After reviewing my notes, I noticed I had neglected a few basic points which I had not added to the corpus of work I had done previously. Considering that most of these remaining pieces did not constitute a full essay in their own right I have decided to add them here as a single remaining work thereby covering the last nuances of the xenopsychological profile I have been working on for the last seven days.

The first consideration is territoriality as opposed to dominance. The point was made that in environments where resources are allocated evenly territoriality occurs, i.e. each species attempts to coerce and control resources for their individual use when many such resources are available. In contrast, dominance occurs when resources are limited and a hierarchical structure based on prerequisites such as strength, power, intelligence or rank is established to determine who gets what and when.

However, there is a slight flaw in this that was not sufficiently addressed. What happens if the organism is identical to the resources they are defending against? An alien form of life may appear or *be* identical to its necessary resources, and if so where does either territoriality or dominance come into play then?

A simple example is a honey pot ant. Some members of the honey pot ant species become living larders, immobile creatures who provide the rest of the colony with honeydew, an invaluable substance. In war, these members of the colony are stolen by rivals blending the issues of territoriality and dominance in an entirely new direction.

Extrapolate from this a species which has so subdivided itself that different members of its species are architecture, (not architects but literally the shelters of other organisms,) larders, farms, and such, while retaining their own individual sentience.

Resources are a rather vague term after all; water is a resource. It can also destroy a house or drown someone. Same with fire, earth, vegetation, (kudzu is a good example,) and so on. And these resources are by no means sentient as we'd understand the term yet they have a massive impact on the environment and us as a whole.

As an added point consider wax and other substances created by species. We perceive the ability to make things like wax or plastic as signs of intelligence but what happens if the substances created were as intimately intelligent as us, or moreover we were as intelligent as them? This is not as incredulous as it sounds; the ability to "create" a child to a species which lacks mammalian biology would seem as alien as the idea of a bee making wax into a honeycomb when the "wax" is part of a sentient organism which is as intelligent as the bee making it.

If resources are as sentient as the species which relies upon them then this opens the door for an entirely new methodology of allocation of resources. Human beings might not even be remotely aware of the underpinnings of how such a relationship might occur or be mutually endorsed.

For the role of creator and created, the role of resource and consumer becomes so fluidic, becomes so interconnected that the question of which individual or species is exploiting the other takes on a magnitude of meanings just as the ability to be affected by another individual or species a role in the creation of ourselves.

We exist as the apex of a large network of species, some domesticated, some not, many of them used as food by us or companions by us or in the case of nature a resource used by us. This hierarchical structure precludes the idea of a species which is in a cyclical pattern without the true measure of control we have, but also without the limitations of vision which have allowed us to perceive ourselves as the most intelligent life on Earth without sufficient proof to that declaration of our egos.

This leads to a second consideration, "intelligent invisibility." There are certain traits which we call intelligent and certain traits we regard as moronically stupid. This plays into our mammalian nature, our need for authority, some overarching societal considerations and our self-preservation.

Regarding an insect working we perceive ourselves (erroneously) to be superior to this organism. I say erroneous not because insects are superior but because we are judging their intelligence against our own.

The more social insects gathered together the smarter the overall entity is. The more humans put together without a leader to direct us in some comprehensive manner the stupider and more moblike, or rather more mob-prone, we become.

These are diametrically opposite states of being concerning how large numbers of organisms work together. Or look at herd mentalities among prey species; large numbers of individuals run away from a predatory organism even though they outnumber said predatory sometimes by a thousand to one.

We would call such behaviour moronic but it is only moronic *to us*. Extrapolating from that one point we may encounter other forms of life which are intelligently invisible to us or vice versa; species which are extremely intelligent but which we would perceive as the opposite. Look at a sea star for example; it lacks a brain and moves at a rate of speed so slow we cannot even perceive visually it is moving at all. It is also one of the most vicious predators in the ocean.

Now imagine an *intelligent* sea star or some equivalent life-form, complete with cities, methods of warfare, sexual taboos, and philosophers, but *retain* their rate of motion exhibited by terrestrial sea stars.

From our point of view, they would appear to be nothing more than very colourful statues. From their point of view we would be a blip, moving so fast they might consider us as we consider lightning; almost too fast for the eye to see and once gone seemingly gone forever.

And this is just in regards to a simple difference of time. Now add issues of emotionality, issues of bipedalism, issues of semiotics and all at once how we relate becomes, well, alien to each other.

For human beings, emotion is the seat of intelligence. Let me say that again, being emotional makes us smarter. Empathy, anger, lust, sadness, and happiness are emotional states and our ability to feel them, regulate

them and perceive them in others permits our minds to evolve and develop more intelligently than if we lacked these abilities.

Some believe autistic people lack emotions; this is untrue. Autism prevents us from perceiving emotions in others and that key lack demonstrates utterly how powerful and essential emotions play upon our human intelligences.

For if one cannot understand another's emotional state one lacks the ability to coordinate emotionally, intellectually and societally with each other. Simultaneously so-called "normal" people perceive autistic characteristics as being rude, aloof, arrogant and so on even though this is not the case. And we are members of the same species.

Now imagine talking to an organism which *genuinely* lacks emotions, and see what happens. What would we talk about? The example used by Freitas was an octopus, a species which seems to run on an emotionless continuum of thought but even octopi communicate with each other and octopi are intelligent, so that they have observed us and know our habits. (And if you think they don't ask someone working at an aquarium.)

But now conceive of an alien being, humanoid as opposed to invertebrate, has a face, bipedal life-form, and looks identical to us, except that it completely lacks emotion. I don't mean this entity suppresses emotion. I may they *lack* emotion. Now what would you talk about?

Family? Religion? Politics? How about war? Lust, love, hatred, wealth, temperature? Temperature probably but even there, for human beings hot and cold have an emotional component which would be lacking with this species.

Sickness and health? For us being sick has as much an emotional component as a physiological one, hence stigmas about mental "illness." And now remove the humanoid appearance of the alien and present a very smart slug or plant or rock. Suddenly the questions of what to talk about become fewer although even as a humanoid this alien would present problems vaster than we could possibly even imagine.

Now compare an emotionless humanoid species with an emotional race of perfect spheres. Seriously. For humans, language and semiotics provide concepts like up, down, forward and backward, concepts alien to a perfectly spherical race. And the lack of faces would be problematic too.

But emotional language has no up or down as we perceive it. True one can say they feel "down" when they are sad but they can also say they feel "sad." Down as a concept is tied to sadness but the concepts are not mutually essential to each other. A species aware of emotions can interpret emotions even if they cannot interpret spatial awareness as we do, and vice versa. But a lack of emotions predicates a lack of all other social understanding for both species involved.

We devote most of our language and language pattern recognition to emotional concepts and though talking to a very smart sphere might be difficult talking to a being who feels nothing would be almost completely impossible for us. Am I then saying that if we found such an emotionless species communication would be beyond us? No, but the ramifications of such a species would alter how we speak and that is difficult to imagine.

Imagine a polite insect. Honestly. In our world insects are brutal, direct and without pity. An insect has no concept of mercy nor do they have a concept of philosophy or art; they are the closest things to a biological computer on this planet.

Now imagine an emotionless insect that is completely polite (and for argument's sake human-sized.) When I say polite, I mean an organism showing no hostilities, showing no signs of malice, acting in a manner which we would call polite, civil even. Yet it has no feelings and is not acting from an emotional standpoint but from a biological one. How can this be?

Human beings suppress their emotional states to achieve coordination in large groups. We sublimate our desires under the auspices of a single individual, leader, religious icon, porn star, etc. (Obviously the last one is fake, but ironically not for the purposes of this essay.)

For another species to develop intelligence it would have to arrange multiple members of its group to coordinate as well, but let us say that this species lacks emotional intelligence, both in its perceiving of it in others and perceiving of it in itself.

What we call civil behaviour, politeness, and social rituals like "thank you" and "you're welcome" are the societal outcroppings of biological behaviours which have shaped us for uncounted eons and will most likely shape us for eons to come.

Our emotional states lead to concepts like social reciprocity, empathy and sympathy which in turn lead to overt expressions of these concepts and others. For a non-emotional species to develop in large groups and survive predation, the environmental hazards of another world, the seasons, (if they have any,) and so on another set of characteristics must be at play to permit survival at all and prevent extinction in any case. (After all, we would not have survived without the ability to fear being eaten alive nor the ability to empathize with one another.)

The idea of communal intelligence, a species aware of communal interconnectedness seems a perfect balm for this question of emotionality. There are two levels of human interaction after all, the emotional and the civil. We began as emotional beings and developed civility to curb emotions in favour of larger goals. But for an intelligent emotional species the use of ritual, the use of “politeness” might substitute emotionality and emotional responses in total. In other words, they won’t kill us outright simply because it is the impolite thing to do.

I know that sounds like an odd thing to say but when we strip away emotion for us what is left is base ritual. Conversely, there is no reason to assume that if one stripped away ritual in a nonhuman species, base emotion would be left. It is an assumption to imagine emotion came first before ritual in a nonhuman species.

The final part of the essay deals with three or four things which come together, (and add that joke comment I made earlier about a porn star.) Culture, semiotics, narrative flow and monogamy are all traits which are both intimately explored and intimately ignored in the search for extraterrestrial life.

I have been using words like “culture” in a universal sense when there is no such thing as a true culture. Culture is not a fixed point of development but rather the scattered and half-formed web of various societal, ideological and intellectual traits of a larger group of people seemingly working together.

When we examine humanity the idea of one culture is laughable. Compare Athens to Sparta, democracy to totalitarianism, and the points become clear. From our point of view, Athens appears the more “modern” state though it had slaves, banned education for women and considered civilizations that were not Athens to be barbaric below the level of animals. Sparta raised warriors, and nothing else. Slaves were killed on sight and these two examples form much of the basis for our understanding of “Western” civilization.

Yet even in these two points, I have made such a gross generalization as to be guilty of ignorance. Some women were highly intelligent like Sappho of Lesbos and some philosophers of ancient times thought of women as equal to men. The idea of culture as a singular entity is so wrought with myopia as to make one question what we know about our past and our knowledge of the human condition in total.

This is also true of the Spartans, considering how Spartan society changed over the centuries. And here we have an area of land barely a fourth the size of a small Canadian province, covering the histories of just two cities out of the many which existed. Now consider that humanity as a species is over two hundred thousand years old, that we have moved from Africa through Europe, Asia, North and South America, Australia, and countless islands and then try to imagine the first “culture” of people living in Africa two hundred thousand years ago to the plethora of thousands of cultures living today.

It is impossible to do. Many consider the previous generation, or subsequent generations, as impossible to comprehend thanks to new slang, new values, new ideologies, new technologies and so on compared to older values, older technologies, older experiences and older taboos. And this incomprehensibility becomes magnified the further back one looks historically speaking, until it seems our ancestors were as alien as Martians compared to how we think of the world today.

Simple phrases take on new meanings in the human realm. Now imagine talking to an alien and then talking to that alien’s great-great-great ancestor, all things being biologically equal. Intelligence is not fixed and so we must not only be aware of how a nonhuman species would appear to us now but also how they were generations or even eons before we encountered them.

Subsequently, we must be aware of how their influence and our influence will affect both species and their developments to come. For example, we think in a narrative structure, we perceive in a narrative causality; hence the use of stories to explore and explain our world. This fact is derived from our cultural understandings and the use of stories depends on previous awareness of syntax, moral absolutisms, taboos and levels of awareness based on the age of the audience.

For example, in our world giving a child an erotic piece of literature is considered taboo, just as taboo as giving a child a literary work so far above their comprehension as to be beyond them. (I admit not as taboo but from the child’s point of view there is no difference in the change between sexual acts they can’t conceive of or scientific

or philosophical points that are beyond them intellectually. Neither means anything to them below a certain age.)

There is no reason to assume narrative causality is considered the means of exploring or explaining the world by another species. So how then do we communicate with them? Even more significantly, if communication is possible at what point do our values and their values come in sync? (I mean value in terms of communication, not in terms of morality, though that is equally likely after a time.)

I mentioned how pornography is sublimated by our species as much as religion or ideology. The internet has allowed three billion people to have access to any sexual fantasy they want which would have been beyond the conceiving of people living just thirty years ago. This epic shift in our sexual reality has affected culture, religion, and society, and yet ideas like sexual monogamy, marriage and love remain a crucial element to our reasoning as a species.

Yet the rationale beyond monogamy has shifted as well. Previously humans were monogamistic for biological reasons; fathers wanted their children, (usually sons,) to have what they had in terms of inheritance. The idea of illegitimacy has been a cornerstone of politics and kingship/authoritarian regimes for eons.

Now that issue has taken on questions of morality when before marriage was nothing more than a contract among the political higher-ups and seen as a material investment among the lower classes. (A gross generalization but there is method to my madness here I promise.)

But how would sexuality and sexual freedom be seen by another species with entirely different concepts of sexual taboo, pair-bonding and such, especially if you combine this trait, (or lack thereof,) with a lack of narrative causality?

Narration is also the property of deception. The ability to narrate is by extension the ability to limit the number of details present in a narration. The ability to tell a story is the ability to limit the total of an entire world or experience into a specific frame of reference or biased reality.

The ability to sexually cheat on someone else is a product of limiting what they, (the adulterer,) are revealing to one's sexual partner or partners. However, to another species where the ability to provide narration is lacking perhaps also the ability to deceive is lacking as well.

So too is the ability to fantasize. Pornography is sexually gratifying though the object of desire need not be in the room or on the same continent as the desirer. Yet the methodologies of desire are themselves the product of our emotional responses, of our understanding of narration, of exploring sex as much in the vein of a story as any other reality.

Sex is language. If we find another species with different sexual taboos, and different narrative structures to communicate with then the overarching question must tie into the question of culture as well. We may change another alien species into a similar likeness of ourselves or more significantly *may be* changed into the likeness of whatever species we encounter.

And this must not be overlooked nor must it be considered either a step forward in our development or a backward step from "our" pinnacle of evolution. Simply put cultures fuck, cultures die, cultures change. The point here is to explore the ramifications of how to speak with a nonhuman intelligence, how to connect to life which is profoundly unhuman to ourselves.

But just as the conceit of vanity impinges on the reality of our mortality so too must we be aware that there may be rules of conduct, states of being and intelligence which require alien physiologies to work *and yet* can be learned by species that do not share the same evolutionary background as the species to which they first arise or come from.

To fully be intelligent our first lesson is to be open enough to learn. This rule extends across all human cultures and all cultures which exist in the universe itself. The second rule is that no matter how "advanced" one is or thinks one is no culture is so self-sufficient, human or alien, that it cannot in some small or large measure learn from one another.

And the final and I feel most important lesson of all is that the ability to change is paramount to survival. One of the greatest conceits of human affairs has been the idea that race or culture is some preserve or some immutable law. This is moronic. Race is merely a genetic alteration which allows certain traits to be more useful in certain environments and nothing more.

Culture changes. The idea that a culture must be preserved, that one set of cultural rules is tied to one race is anathema to human survival.

If we do find other forms of life the worst sin is neither war nor is it attempts at colonization. The worst sin is assuming that whatever is alien belongs to aliens and that whatever is human belongs only to us in all things. If we maintain the idea that only those things developed by one culture should stay in the realm of one culture, I could not use Indian numerals, Arabic mathematics, Iroquois-styled democracy, beds, paper, money, English nor would I be allowed to use the countless styles of poetry I have from all over the globe.

Now amplify what I know thanks to the influx of other cultures by a factor of a billion-billion, not in the realm of the entire universe but by the addition of one other world with intelligent life on it.

Even a rogue planet without light travelling through space, if it had intelligent beings on it would so add to our understanding that it would be beyond comprehension in terms of importance to us.

Part of the problem is not the key to the solution. Rather the entire problem is but the key to itself. The problem is communication. So too is the solution.

A THOUGHT EXPERIMENT (There are far fewer limitations to life than we realize.)

Recently I began a study of extremophiles, organisms uniquely suited to specific hostile environments over this planet's surface, in several volcanoes and beneath the waves at pressures so high they would kill most forms of life.

To gauge the effects of such environments and the types of lifeforms one could find therein I thought up the idea of a fictional planet which I have named Tluroptis. I'm not exactly sure why the planet is so named, but it does seem vaguely alien enough to suit my needs.

The planet and its relation to its home system and the galaxy are described as so: Tluroptis is six times Earth's gravity located as a lone body orbiting a brown dwarf star near the galactic hub. This means that the planet receives almost no visible light and because of its proximity to the galactic hub is surrounded by intense bursts of radiation. Furthermore, its orbit is elliptical, going closer to its sun than Mercury at its closest point and farther than Pluto at its farthest point, causing the planet to experience widely divergent seasons from extremely hot to bone-chillingly cold.

The atmosphere of Tluroptis is sulphuric acid, similar to the atmosphere of the planet Venus. The planet has oceans, all of which are extremely virulent alkalis, while its landmasses and continents are composed almost entirely of arsenic. Tluroptis has no tectonic activity and because of the sulphuric atmosphere, the arsenic is constantly being eroded which is then added to the alkali seas and oceans.

To compensate seemingly for this loss of land the planet's bacterial organisms feed off the ambient radiation, especially the radiation of Tluroptis' farther moon, Turipaku. Turipaku seems to act as a sort of natural nuclear reactor, belting out vast quantities of radiation and energy which the bacterium feeds upon. They in turn secrete arsenic which becomes arsenic coral, similar to coral found in Earth's oceans save that this coral is produced entirely on land.

It is this constant creation of arsenic coral which creates new land, even as old land is dissolved and mingles in the alkali seas.

Tluroptis' closer moon, known as Tlalipaku has the opposite effect than Turipaku. Tlalipaku absorbs all ambient energy and radiation which means that when Tlalipaku is in conjunction with Turipaku anything caught in its shadow freezes to death and dies almost instantly.

Of course, Tlalipaku would normally freeze and cause death to anything below it save that Turipaku's influence exists simultaneously with Tlalipaku's, much the same way the sun and moon can be observed in daytime, but the influence of the sun makes the moon appear much paler and less noticeable to the observer.

Because life developed in the oceans on Earth, (just to make things more complicated,) life developed first on land here and then moved into the oceans. From the oceans, the arsenic mayflies as they are known, took control of the skies and are the most dominant life-form of the planet.

Arsenic mayflies are something of a misnomer. They are a composite life-form, several bacterial colonies and small organisms acting as one, a form of multi-symbiosis taking the form of an almost insectlike being.

The reason flight would be the dominant method is because of the acidic atmosphere. Bacterial organisms would survive but even bacteria would need an efficient means of travel and because of the acid which is not harmful, but neither is it beneficial, there is no reason to spend time on the surface itself.

With all terrestrial organisms, land is used as a place of rest, sanctuary and such, even if that organism can fly. Because of the composite nature of the mayflies while one “part” of the organism rests another part continues to keep the animal flying using a host of methods, from wings which glide, wings which fly actively, to gases similar to helium; all of these methods are used individually or in concert.

These arsenic mayflies are so-called, not only because they can fly but they also have extremely short life spans. This constant, violent and short struggle for existence means that the evolutionary processes are in overdrive. Arsenic mayflies are “born” in the alkali oceans, “grow” as composites by mingling different subtypes together, “mature” into their flying forms and then “die,” meaning that individual colonies within these organisms disintegrate after only a few short hours.

In that time the mayflies spread outward from the oceans, depositing parts of their “adult” forms everywhere which becomes the next reproduction cycle of new bacteria that feed off the radiation and secrete arsenic, which the bacteria in the alkali oceans use to catalyze themselves into the next batch of composite life-forms. And the circle of life rolls on.

I’m not entirely certain of my motivations for creating this thought experiment. I believe the reason is simply because I haven’t yet used extremophiles enough to my satisfaction and creating such an utterly hostile environment is an excellent prerequisite toward that end.

ORIGIN OF LIFE ANSWERS

To properly solve the question of the origin of life I must break apart the answers to each question as given. However, the order in which I solve each question need not be linear. Therefore, I will arrange the questions here as so and in solving them place the answers in the order as arranged.

1A) What caused life to form?

1B) Why did cellular life emerge most strongly during the Cambrian Explosion and not at an earlier or later time?

There are only four real answers to that question, two far-fetched and two possible. Various religions postulate a god or deity or life came from elsewhere in the forms of spores, clouds of biomatter, etc.

Without proof, the second is farfetched while the first is ridiculous.

But what of the other two possibilities?

Life may have emerged due to a biochemical process during the two billion years when the Earth was still too toxic to imagine it as the Earth we know.

The only problem with this supposition is that said biochemical processes should be easily replicable in a lab. Reproduce said conditions of the early Earth, reproduce said chemical processes and watch life develop. Just (don’t) add water, depending on the nature of the world at that time.

This should work but so far has not. But why not?

The other possibility is not that life is biochemical but environmental. Life emerged because the Earth itself begat life. It may well be that each planet can spontaneously produce life at a certain point in its history, that planets all possess some moment when the conditions are right for life to form and those conditions can never be repeated or replicated again. The Earth literally gives birth and if this moment fulfils nothing then no life comes.

If so, life is a product as much of time as of space and just as precariously runs along the length edge of a moment as upon the shallow edges and shores of a now-vanished continent. Life may exist and may have existed only because it was meant to, only because the Earth allowed it so to come at that time and at no time afterward.

At least it’s not as farfetched as a deity.

But this leads to the obvious question of how the Earth in a moment could create life when at a later or earlier time it could not.

The simplest answer is there is some property, some article of life subject to a specific time and place and

once incapable of being achieved can never be achieved again. If true this means the solution to life's beginnings can only be answered in whatever properties existed at that point of time. And if so, cannot be regained again.

Now what was there at this point?

Fire. Toxic and anaerobic environments, etc.

In other words, the opposite of what one would imagine life to emerge out of.

Does this then mean that to find life we must look at where we would assume life is not?

No. But life now is the product of life which was, and those forms of life did exist in a veritable toxic death world which would have been lethal to us.

Something must have happened in this death world to introduce death and before death the inevitable life. Or the life inevitable.

So, what caused life to form?

A point between chemistry and biology. But then what caused the point?

Everything I've written about so far has been about the study of the world in reverse. This is the first chapter, the first word and syllable, so to put it simply what beget it?

Damned if I know.

But what could have caused it?

If the Earth in the most select moment brought forth life, then the easiest reason for life to form is to regulate an existing system somehow bent. Forget the divinity of life, what is the utility of life?

Life in all its myriad forms metabolizes chemicals, alters its environment, develops language and synapses and thoughts, etc.

Meaning the reason for life's origin might well have been a means of regulating an out-of-balance system. Something happened in the period before life when a balance was reached and something happened at the moment of life when the balance was not reached.

Under this assumption, life emerged out of the Earth's need for some regulating mechanism into its own previously lifeless ecology. So, life did something essential, not to life on Earth but to the Earth itself.

The coalescing of chemical properties together tips the balance of proteins and other potential life-bearing entities toward themselves and away from the rest of the Earth. A division then, a breaking up then, moving massive amounts of proteins and substances toward a self-replicating system, drawing up more chemicals, creating more physiological reactions, drawing up more elements into itself over time.

Seen in this context the origin of life occurred as a means of restoring an ecology somehow out of order, using life not as some divinity but as a utilitarian aspect of Earth's maintenance. Meaning that all life's basic functions are geared toward the augmentation of the Earth itself along some, if not preordained than pre-understood, pathway, toward something. Something meant to be. No, far too fatalistic, but surely something possible to be.

In this interpretation, life began to regulate a broken system and is still running along this course. This also explains why life has not developed in the same way elsewhere. As more bacteria developed the need for regulation ran apace, culminating in cellular and multicellular development. In this context our existence is designed for the Earth's continued survival and the more it changes the more we change and therefore the more it changes.

Extinction is simply an example of where this gauging and balancing went off course, and even our own extinction may well prove to be nothing more than any correction in a system already billions of years old whose only function is to perpetuate itself toward some balancing act which will never be achieved again.

Because life can never truly balance anything.

Whatever augmented or altered the Earth to set it on this path has done so in such a way that nothing we do truly returns it to a preexisting state. Rather we continue to attempt correction when correction itself has proven empathetically impossible.

As such the Cambrian Explosion may well have occurred simply in further correction toward some new catastrophe as it happened, or rather it happened and then life emerged in counterbalance to it.

If right life began for one simple reason, and out of one simple plan; because the Earth needed it. We are nothing more than the mountains, the rivers and the plains writ large in the expectation that we are more, and something else.

Perhaps the most terrible thought in the world is that we are not.

1C) Why did sexual reproduction emerge? What benefit did it convey?

P divided by C minus A equals SR.

(Predation divided by competition minus Availability equals Sexual Reproduction.)

Three points lead to the emergence of sexual reproduction: predation, competition and availability/proximity.

Predation cuts population but is often, (save in cannibalistic species,) an external threat.

Competition meanwhile is an internal threat.

Scarce resources mean only some but never all of a species can gain a noticeable advantage. As such cloning fails.

If everyone is the same then the chance for access to resources is ultimately chance, limiting the potential value of the organisms involved. Random chance delineates from adaptation; it means no matter one's skills or abilities or nature one is redundant, incapable of affecting change on either the large or small scale.

When chaos reigns evolution ceases.

By design, adaptation must adapt *toward* something. Competition is the gauntlet of that direction.

The third point is availability/proximity.

Success does not, cannot translate to success in a vacuum with no one else to know our experience of it. Put simply success is not built on isolation.

This point would seem like competition but it's not.

Competing differs from potentially having. I need not fight someone if what I want is large enough for both of us. Rather if there are more women/men for both of us, (I use both genders because in nature both genders seek the other,) potential mates must be in tangible range, in the proximity thereof or else their potential desirability is moot.

Negative advantage- The greater the limiting power of reproduction on a species the more members of said species will be produced as a result. Pretty obvious of course. Just look at mice. However, there's a corollary law in this.

Positive disadvantage- The greater the stresses the greater the adaption. When stress is removed the species will inevitably suffer as it has evolved with that stress in mind.

Ergo mice heaven must have cats in it. Otherwise, it's mice hell.

This paradoxically applies to humans too.

Utopia cannot survive the first brush with the reality of the fucking screw-ups that brought us this far. Remove our stresses at our peril, for the absence of them all will destroy us.

If a species has zero predation it likewise has zero competition meaning the need to evolve is remote. If availability is high paradoxically the likelihood of reproduction is low, all other traits being zero in the previous two categories.

Take mice for instance, from the experiment Universe 25.

Mice are constantly preyed upon and are therefore in unison with competition; greater production greater competition thereof.

Availability is likewise limited though not to the same extent as the first two categories.

Eliminate the first two in mice though and the third collapses since availability depends on the first two. That's why Universe 25 collapsed. That's why sex began.

But this doesn't answer why sex . . . Except competition is one gender-based.

Whether male or female competition applies to *them*, competing with the opposite gender skews the equation. Gender is the limiter of universal competition.

But this still doesn't explain the mechanism involved.

What *led* to sexual selection/reproduction? Predation of course.

If one predator knows the genetic pattern of their prey then one size fits all for attack.

Shuffling the genetic deck prevents this but also does more than this. It brings members of said species together. Sex unifies members of a species either in total or part of the time. As such socialization begins. A truly solitary human race would not last one generation. Sex as language.

Of course, there is a part of this I missed, namely children.

But children count as both competition and availability.

Many species are incapable of siring new offspring while rearing the first brood. Of course. *Of course.*

A cloned species need not invest in its offspring.

The competition is 1:1. Either parent or child survives but evolutionarily no real change is noted. Sexual reproduction tailors a new offspring out of two others. This means there are two types of competition involved, linear and compound. Linear is for a clone and compound is for a sexually created child.

In linear, the result of who wins is irrelevant.

It doesn't matter if a parent or child survives since they are genetically identical. With compound competition, however, the onus for survival is exponentially greater for the child. As such the child's survival is of greater importance than the parent's.

Imagine the two individuals as points on a graft. The clone is on a linear graft, each previous and subsequent individual likewise upon a flat line, unchanging, and the total genetic heritage of a single equally unchanging parent.

In comparison the child is the product of two parents, four grandparents, and eight great-grandparents, forming a curve which is constantly moving up so that his or her children will be further up the graft than he or she was.

This increase for the child is like a tardigrade, stealing DNA from others. But in this case, the theft is of the preceding generation and all other previous generations before that. As such the value of each generation's offspring rises since they contain all previous genetic patterns within their very essence.

So, if each investment is increased generationally then the ease of reproduction goes down as well, not by year but by eon. Which itself also causes differentiation to ratchet up. Ergo, once begun, sexual reproduction cannot end unless cloning is involved.

No. No not mere conjecture but rather the total of the question at hand. During my recording of these documents, I made a formula for sexual reproduction and the formula ran as so; $P \div C - A = SR$.

Now, said formula as written was pointed out to have what seems at first a major flaw in it. Namely wouldn't P be timed by C rather than divided by it? After all the whole point is to put pressure upon said organism and the more competition timed by the more predation should force the issue better to lead to the bottleneck or chokepoint by which sex alone should remedy a cure.

Then it occurred to me that *both* points are accurate. Both versions.

The formulation is accurate but can also be altered and by altering the formulation one can get to the truth.

But not only this.

I realized another point, one of which I think is of even greater importance; predation dictates the environment. The entire quote is as so, "Predation dictates environment; mouse hovels are designed *against* cats." Further on I added this, "If predation dictates environment, then availability dictates form. Cats prey on mice, mice build environment against cats. Chance for reproduction and breeding cycle indicates form said reproduction *and* organism will take."

In other words, it is the onus of the predator to shape the environment of their prey, to shape how prey build their environment, how they structure it, and how they *use* it.

This mechanism explains how mice build hovels, how deer blend into their environment and even how chameleons change colour. And no, I'm not arguing chameleons blend into their environment, that is a fiction which belies the chameleons' true brilliance by communicating their emotional state via the colours they use.

Chameleons exist upon a latticework of predator and prey and their means of communication, their use of the treetops, and even the structure of their toes all depend upon the interaction of what eats them, who they compete against and what they are seeking.

But predation comes first.

But how does any of this explain either sexual reproduction or the origin of life?

Take a population of one hundred people. For argument's sake let's make them all 20 years old. All of them should be equally capable of reproducing. This should equal fifty children at least or assuming all pairs have twins or triplets more than this.

However, if we factor in the three conditions from before, predation, competition and availability suddenly the most one can have is fifty, not the least.

In terms of predation, this refers not only to animals but *anything* capable of ending life which is not subject to the genetic organism of which one is a part. In other words, winter acts as a predator just as surely as a lion or bear. Cancer is just as much a predator from within as wolves are from without, and more insidious. Now, though cancer is a product of our biology it is no longer acting like a part of our biology just as a wolf is genetically similar to us, both being mammals, but would not be expected to take food from us or lick our hands in a friendly gesture.

And both wolves and cancer exist on a gradation of predators. Wolves after all have the potential to be dangerous just as cancer has the potential to be dangerous and neither organism is lethal or even intends to be lethal most of the time.

They are acting according to their natures. If a human being dies this is no more malicious than a hurricane. But, in all cases, we as individuals are subject to and made aware of the dangers at hand.

Now starting with the potential for cancer, for disease the numbers go down. How far down? The greater the predation the greater the loss incurred. Let us say the environment leads to a fifty percent rate of predation, meaning that out of one hundred people who reach 20 then half will not reach 21, or put another way half did not reach 20.

We don't have 100 people. We have 50.

This means we have 25 children. But we don't.

If one factors in homosexuality, sexual infertility, mental illness and just incompatibility the numbers go down further. And one key thing which I think has not been addressed but should be; evolutionarily speaking there is no difference between being gay and just not having sex. From a biological point, it makes no difference. Now why does this matter?

One of the most vehement elements of certain societies is arguing homosexuality is either immoral or somehow indecent. But if we look at sheer numbers according to "evolutionary" theory one man should have as much unprotected sex as possible and then not look after his offspring. The conceit of sexual morality as defined solely by evolution is the idea of just having tons of sex with as many people as possible but no one argues *that* to be especially moral either.

This is significant because the limiting effects of sex are more important than the expansive effects.

Homosexuality has been noted in many mammalian and avian species. It is noted to have existed in many cultures all over the world. But if one argues evolution to be the idea of spreading genetic material then the genes or factors leading to homosexuality should not exist. Evolutionarily speaking not being able to propagate genetically should lead to the elimination of said traits.

Instead, homosexuality persists and is as essential to sexual reproduction as all other factors listed. It is the absence, the gap which is leading to an increase in sexual reproduction, not the presence.

So, we have less than 25 children, but how much less?

The numbers are determined by competition between members of the survivors and determined by the availability of everyone involved.

This means we're dealing with negative numbers, with lesser and not greater chances to reproduce.

Herein lies the point. Sexual reproduction only functions based on the limiting effect of what is available, on the pressures involved. It's a tunnel, a chokepoint allowing only so many chances to reproduce successfully to get through and the more limiting the chances the greater the need for sex.

But why?

Predation at its heart is the taking of an existing population and removing them from reproducing. Competition meanwhile is the struggle over a scarce and finite resource whether that resource is physical, sexual, mental or environmental. One fights over mates, food, shelter, possessions and peace of mind. *But one is not preyed upon by these things.*

To take a business model, competition is the war between companies over the marketplace while predation is a hurricane damaging both companies or potentially damaging them both equally.

One can fight one's competition. One does not fight one's predators. One flees from them.

All of which leads to availability.

Availability though is only sought if it is rare.

Let us return to our model of one hundred people. Let us imagine they are omnisexual in that they will have

sex with each other willingly. For argument's sake again we have the same age but as a corollary imagine a population of one hundred whose ages range from infant to elder, (6 months to 80 years,) and the same omnisexuality is at play.

This should theoretically lead to an increased population compared to a population where sex is not actively encouraged by all individuals equally. And before I am critiqued for arguing about adults and infants having sex, I'm not endorsing this. Quite the contrary, I'm pointing out exactly why having sex with everyone equally is a bad idea without even addressing the moral repugnancy of rape.

In a population where everyone can have sex with everyone the availability of sex is high. This should lead to an increase in sexual reproduction. But it doesn't. Our current society theoretically should be having far more sex than their ancestors because the availability of sex is higher. But it isn't.

Availability works on a negative principle, i.e., the greater the desirability and the rarer the resource the greater the demand for it.

In our population of one hundred omnisequal people compared to a population where sex is not commonplace but still happens the second society would be having more sex than the first society.

Sex works in its absence, not in its presence.

And more to the point sex increases intelligence.

Of course, with deficit spending, the locust is weakened/starved when the swarm is fed, and compound competition/reproduction.

Sorry, a bit of a mess so let me explain the entire thing in detail.

Sex increases our intelligence first. It requires intelligence to seek out a partner, to find the traits she or he desires, to make those traits available, to compete, to avoid predation and to successfully breed. The smarter the organism the greater the chance for sex.

But secondly why sex?

Deficit spending.

All evolution is predicated upon a simple formula; there is always less, and there is seldom more. All evolution is predicated upon the realization that there is simply not enough to go around equally to everyone and that a truly communal perfection cannot exist because, by its very nature, such a communal structure would negate evolution itself.

From the beginning, from the earliest microbial life, existence has depended upon an absence, not a presence. This ties into both sex, resources, shelter and life itself.

It is the absence and the limiting aspects of this situation which has led to both sexual reproduction and evolution taking hold.

Let us imagine again our one hundred people but this time they are all clones of the same individual. They therefore have the same genetic pattern and the same physical form. Now it has been argued that parasites would have a key of sorts in this sort of situation and would therefore obliterate the cloned population outright.

But that's not why sex occurred.

Out of our population of one hundred, there is an equal chance for survival. There is a hundred percent chance of survival leading to a proliferation of these exact genetic patterns surviving to the next generation.

Does it therefore matter if any one individual survives?

Evolutionarily speaking no.

Whether half the population dies or 99 percent of the population dies the genetic viability of the organism, for argument's sake my cloned self, remains at 1.

If one hundred survive to reproduce the genetic viability likewise remains the same, at 1.

There is no change, no evolutionary advantage between one individual surviving or one hundred individuals surviving if all individuals are the same.

However, resources have not changed. Predation has not changed nor has competition changed.

Except now the mechanism by which either predation, competition or availability/resources exists has been augmented, warped and downright confused. A predator need not tailor their attacks for the individual but for the group. Predators exist by and large through the process of tailoring their attacks, of learning both how the species and the individual act in a predator-prey relationship.

Predation is the cornerstone of adaptability in a deficit-spending world.

If resources are always limited then the predator must always be on the lookout for prey. The prey ergo must also always attempt to survive against predation. But if a species is identical then the loss even of a large part of the population does not diminish the original organism's attempt to reproduce and spread.

So, again we are dealing with a deficit of resources. The locust is starved when the swarm is fed.

As predation occurs the individual is sacrificed for the group. The loss of one or two organisms is minimalistic as a concern to the overall species in question, *except*. If we factor in competition suddenly the situation becomes much worse.

This is why social insects have one reproducing member and thousands of infertile workers and soldiers. There is no competition within the colony, either for resources, mates or shelter. The entire colony acts as one individual but it only acts this way because competition has been reduced from the individual to the larger colony/super-organism. And notice I say reduced, not increased.

The individual is the greater consumer of resources than the group and where the group is mitigated and appeased the individual survives and thrives. If instead competition occurs within a cloned species appearing like an ant colony but where each individual has an equal chance to replicate then the colony implodes under the weight of its own competition.

It is the individual, not the group which is the greater consumer of resources because it is the individual, not the group which *demand*s the greater consumption of resources. If a cloned species exists where each individual has an equal chance to reproduce asexually then there is no need for the collective will of the species to thrive. So long as one organism can replicate that's all the species needs to survival in total.

But this reality means the same entity is fighting over scarce resources with no real means or incentive to work together since each organism is acting in its own best self-interest. The limiting nature of resources means competition's chief aim is not to winnow out the weak but to select those most capable of capitalizing upon the resources at hand.

An insect colony differs from a pair of sexually active humans only as regards what the colony needs and where the colony is. Otherwise structurally, and psychologically they are the same on an evolutionary basis. Like the couple they seek out resources, they work together to achieve common ends, they avoid predation, and they seek available opportunities for sex to further their biology. I say a couple of sexually active humans are like an insect colony because the colony has already achieved its only opportunity for sex and now "to further their biology" the queen is busy laying eggs, using the sperm provided to her while in flight.

Predation limits a population's growth but competition limits a population's survival. Our ant colony can survive the loss of individual ants just as we can survive either the loss of a few cells or the loss of a few of our numbers to disease. But colonies compete at their keenest during points of sexual availability when ants swarm into the sky and first come first served is a more literal explanation of the event than otherwise supposed.

This point of competition in a nonsexual society or species though means everyone is at everyone's throats constantly with no clear advantage for either organism to survive. Buridan's mule; placed between two equally valid competing organisms neither will survive since one cannot choose under the circumstances at hand.

This then is the root of all sexual reproduction, limited resources and equal competition produce a situation where the advantage is nil. But how do compound competition and availability tie into all this?

Simply put by being children.

As I said earlier children are a form of compound competition, meaning each subsequent generation is more valuable than the last. The onus therefore of the species' survival depends upon the children's survival which is not the case in asexual species. So long as *a* child survives it doesn't matter if no other children survive in a nonsexual species.

In comparison in a sexual species, *each* child's survival depends upon the survival of the species in total.

Now does this not contradict the point I made earlier about homosexuality where the limitation of one's ability to reproduce leads to an increase in sex?

No.

The greater the number of children born the greater the odds some will reproduce. The more diverse the children born the greater the chance that said diversities will increase in the next generation.

Homosexuality is not a trait shared by all offspring any more than any trait is uniformly shared by all offspring. Height, intelligence, the chance for disease, and chance for health are scrambled, the genetic building

blocks of each of us so altered and augmented that it would be impossible to actively tailor the next generation “perfectly.” Each child is a unique entity, subject to a unique set of circumstances, chances for survival and chances for ruin.

One can no more predict the path a child’s life will take than one can predict the future of Earth’s history before it comes, and that is the point. We exist in a state of unknown unknowns, known unknowns and known knowns.

I admit that seems hard to understand but it is one of the cornerstones of our evolutionary history.

Predation, competition and availability are all knowns, all things by which we are either implicitly or explicitly aware.

But how these play out and who and what our competition, predation or availability will be are ultimately either known unknowns or unknown unknowns. As such given the limitations at hand each child has the onus of survival placed on them because each child may be uniquely suited or ill-suited for the environment to come. Just as homosexuality can lead to a deficit of available sexual partners it can also lead to the parameters for people who are capable of sexual reproduction. The random nature of sexual reproduction is just that, random, leading to a fullness of potential over time.

Just as one cannot have the same resources or face the same competition so too for successful reproduction to occur the potential must exist for successful reproduction to *not* occur. A truly random genetic pattern tailored from all previous generations must have as its fundamental possibility the equal chance *not* to pass on its DNA, otherwise, truly random sexually based mutations leading to a successful cumulative species cannot occur.

Or said another way, the only means by which we can have children is if the possibility exists that they won’t.

Since all life exists at a deficit, each lifeform needs something which is lacking either from themselves or their continued survival all life competes, tailored between predation and availability. As such the only means by which the gauge, metaphorically speaking, can move is if a balance is shifted such that each future generation somehow deserves more than each past generation. The accumulation of new genetic traits ensures this.

As a final point, the formula I described can be analyzed rather easily.

$P \times C + A = SR$

$P \times C \div A = SR$

The beauty of this answer is I can tailor the responses from here on in, and if right my original formula can be borne out and if wrong, I can prove that too.

2A) How did symbolic language develop? By which I mean all language, from signs like spines and claws to the written word. After all, context is vital to understanding, ergo evolution must have developed in tandem with language.

2B) How do new ideas develop in evolutionary symbolic language? Since environments change over time it stands to reason likewise symbolic language must change as well, leading to

2C) Does the environment create language or does language paradoxically create the environment?

2D) How does addiction work? Assuming evolution’s primary goal is strongest/most capable and adaptable or adaptive to survive how do traits like addiction or homosexuality work? I mention both not because both are negatives but because both eliminate or limit sexual reproduction. If one’s preference is one’s gender reproduction is impossible. Likewise, consumption of tobacco or alcohol limits the health of the person, thereby limiting their potential to reproduce.

2E) How does sexual language tie into sex? How does appearance, scent or sound tie into the symbol of attraction for all forms of sexually based life? Also

2F) What linguistic points differ in asexual species? If sex ties into language what languages do asexual species use?

The next assignment to address is the question of symbolic language.

At heart symbolic language would not seem to be a major question geared toward the origin of life, and yet without language, no species could survive past the first generation.

Language has always been a concept which is supposedly the domain only of humans and yet clearly this is not true. Any organism incapable of distinguishing the displays and signs of either predator or prey cannot long

survive and displays are just that, means of revealing information about the organism *to* other organisms in the immediate or not immediate area.

If a human being observes a tardigrade for example they will see a creature with transparent skin, no bones, no eyes, eight legs, swarming and congealing about an aquatic environment.

These traits, transparency of the skin, lack of eyes, and lack of bones translates often to a term well known, the term of disgust.

But equally well the term can be awe, amazement, surprise, and fear.

The human remains the same, the tardigrade remains the same. But the human's response can differ, vastly, and not merely from person to person but one person over time.

As such, the beginning of language is as follows; language is anything, either object or concept, capable of attracting multiple meanings so that it can be appraised or shunned or used and carry with it multiple potential realities.

Language is the multitude reduced to a single line.

Let me provide a broader explanation now.

Humans have words for ideas, for things which do not exist like aliens or demons. But the words themselves have ideas attached to them which predate their original meanings. As such even though the words and ideas seem fixed in stone they are not.

Fiction forms the ability to translate the unseen, and the unknown into the seen and the known by transforming lines on a page into image, thought and person. It is the subtle alchemy of augmenting image into what is beyond image. *I* becomes a concept of the individual, just as *one* does. With three letters I have created meaning but said meaning only exists when meaning is attached to it.

Language is like DNA, the surplus of itself always dwarfs the applications of it.

And like DNA it can only be used by the deciphering of it rather than the mere existence of it.

As such one can argue language to be the DNA of the mind, of the soul even, but I believe it goes much further than this.

Language proceeds thought.

And language always exceeds thought.

No matter the limits of a language those limits always recede against the backdrop of further words, and further concepts, leading to the seed-emergence of new ideas in turn. Is this a further clue to the paradox of the origin of the species, that thought must always exceed in relative tandem with language but language comes first?

But how do I know this?

All words no matter their outcome or origin only come into their own in the fullness of time and as such meanings contrary to first expectations always attach themselves to words after their first forming though.

As such word proceeds thought and the mechanism of language proceeds the language itself.

Sex is language is a main point toward the solution at hand.

Symbolic language begins with *self, desire, enemy, and goal*.

Who we are, what we have, who is against us, what we feel, what we want. Sex is included in all of this.

Imagine the spine of a porcupine. Said spines mean nothing unless a predator has the wherewithal to imagine the spines *in them*.

Deterrence is nothing without the implicit understanding *of deterrent*. This implies the root of language comprehension is not merely the symbol but the cipher to come out and unlock the meaning of it for all to know.

But that should be rather obvious after all.

Language predates thought as thought predates context and reality thereof. Language begins in the concrete and translates to thought, not the other way around. A lion who must think about what spines or claws mean before using them never achieves the first step of using them. If one considers action to be language thought comes after the development of the first syntax of the action, not before.

I could be wrong after all. The first life had no minds but navigated, had no brains as we'd understand them. Can an action exist without a mind attached to them, or without a thought? Ergo too can language so also exist?

What is language? I provided one definition before and I will provide another now.

Language is the transmission of one act or object into an application between the act or object itself into

multiple facets of meaning. A spine is defensive to a porcupine and offensive to a lion, gills are lifesaving to a fish but alien to a man. The action or object is the same, but the meanings behind them are not.

As such mutual context can occur but singular meaning is more likely based on the actors on the scene/sane. This means that in later development language can create people or things that don't exist so long as they mean something to the one interpreting the symbols of what they are.

But this means an interpretation without a mind behind it.

A virus after all "knows" a host cell but has no means of articulating this, not even certainty of it being alive. As such language can exist without thought behind it so long as it can be *interpreted* successfully. But how can language be interpreted without a mind behind it?

Chemical signals dictate to the virus the genetic structure to invade. Can a language ever be an unconscious act?

Language precedes the thoughts behind it just as action precedes the understanding of it.

An infant does not think about acting and then act, they act and later in life they are capable of thinking about it. As so viruses and bacteria perhaps, perchance.

All language is composed of the following three traits: *continuity*, *point of distinctiveness* and *influence*.

The books of any writer show continuity of style and substance and if read, the voice of any writer, of how they speak is independent and irrespective of anyone else. They are uniquely their own. However, each idea is constructed from a point of distinctiveness, a moment when one facet or another dominates and if lost will not come again.

How one speaks is the same, *what* one speaks is not.

This is based on the *influence* of previous literary models which helped these writers achieve their own style apart from the style which influenced them. And, equally important, dependent upon when they were influenced.

The earlier the influence the greater influence could have been over time.

Influence is like sex, taking a preexisting potential structure and pairing it with itself, i.e., in concert with male and female, begetting a child. Ergo just as DNA is the building blocks of life so too language is the building blocks of thought and constructed along similar pseudosexual lines. And just like sex even if the act is the same the results differ.

Point of diversification- Two readers if given the same book are influenced along a different continuum of facet-awareness, based on age, sex, creed and the individuals themselves. As such each book is not a book but a multi-universal touchstone as distinct as fingers in quickly washed-out eroding sand.

If you give two people Dante's *Inferno*, they will come to two very different interpretations based on the text at hand, and themselves. All language depends upon a certain narcissism, self-reflection *and* empathy to survive. As such like DNA, not all influences are created equal and all influences depend on the first two points to survive.

So, language begins with the interaction of others, irrespective of the minds involved, and the three components of continuity, point of distinctiveness and influence affect all forms of language irrespective of the *species* involved.

Like these three components from sex, the three components here limit or augment community. The formula involved is as so. Continuity times point < influence thereof.

Imagine each word as a point on a grid, forward and backward in time. When one reads Shakespeare, they are reading history as interpreted, new ideas and words taken from his mind, *and* the time in which he lived *and* the various points he wrote in the times of his life. Shakespeare is not Elizabethan, Elizabethan is Shakespeare. Symbolic language begins before thought, rather thought keeps up and keeps pace with language.

I know this because by the definition as described both bacteria and viruses have language.

And I will go further.

Imagine a stone. It cannot see, hear, nor has smell or taste. Let us imagine however it is sentient. It perceives, by whatever alien means will dictate its language, will add to or subtract from its capacity to articulate the mechanisms of language as shown within its mind.

Now let us give it the power of touch.

Now again the power of smell, of hearing, of sight.

Each subsequent increase, each widening of the gyre of sensory experience will add to its potential for language but the mechanism in play must exist *before* the senses are achieved. Even if the stone had no word for sight before, nor colour, the potential must have existed in its language for such a thing, such a word to form.

Why assume this?

Because the language in question must always exceed the potential of the language it currently achieves.

Or imagine a telepathic form of sand, a vast desert subject to human thought, or rather any thought of any species imaginable. One can imagine anything and anything imagined the sand will create. One would assume the sand's form, its structure to be limited, when in fact it is limitless.

Language always exceeds the capacity of its first use. Senses, thoughts and feelings are limited in comparison to this. The policy of every language is built upon the language first, thought second. A word exists before one assigns a meaning to it.

But how does any of this explain the origin of life?

Sex is language literally and figuratively.

The capacity to reproduce is a literal and figurative act. Once life begins it must have a means of centering itself, but also a means of perpetuating itself. Language is merely our ability to tailor what is to what we need, winnowing away what we do not perceive as yet while the potential always remains that what we can perceive is not total.

One of the questions asked is if the environment creates language or if language paradoxically creates the environment. The environment is the wellspring of language since language is always a part of what is. Out of what we experience we tailor new words and out of new words, we tailor new experiences.

I asked if asexual species differ in their perceptions but in truth, all species and all individuals differ in their perceptions. Language is the wellspring by which all life takes the wellspring of itself.

But what of addiction? Sadly, this does not tie into the previous issues in any satisfactory way but since the brain's capacity for simulation is tied along a route of dependence and experience one could easily argue that with sex the randomness of the unhealthy must exist for health to be.

As a last point, I asked how the language of sex itself works, scent, and appearance, but again this is ultimately an evolutionary point based upon the randomness of the human psyche. Just as sex is language so too is fetish.

And like I said earlier each object can illicit multiple meanings to multiple people. As such at least fetish is, though I have hardly explained addiction apart from this one theme.

Moving on.

3A) Why is DNA the building block of life?

3B) Tardigrades can steal DNA. Is this ability rare or was it common for most species' evolutionary reality?

3C) How does Earth's position tie into the origin of life? Is DNA/Evolution only applicable to Earth or could it apply to all life and planets across the entire universe?

3D) Assuming DNA is the same over time, i.e., the genetic structure of bacteria from the Cambrian same as the structure of bacterium now, how do new traits/DNA develop over time?

3E) How does immortality work? And perceptual immortality? Some species are truly immortal such as certain jellyfish. How do they perceive time? This point is essential to evolutionary theory. To reproduce one must first mature which requires time or rather the perception of time pressing.

Now why does this question matter?

Because based on the species one year means a vastly different thing, either an unsurmountable amount of time which no individual of said species can attain, a chasm which no member of said species can cross over, or a blink of an eye as common and ordinary as any other passing day.

Time is a crucial element in all this; can DNA augment a sense of time, based on the individual species or do we all experience time as 1=1?

3F) If DNA "desires" to perpetuate itself why isn't hermaphroditism commonplace then? Either like nudibranchs or earthworms or both, reproducing with each other at the same time?

DNA/Sexual selection should lead to maximum reproduction so how does halving resources somehow

increase productivity? One can argue sexual difference leads to pressure to evolve but the same pressures already exist in existing hermaphrodite species so that argument is patently flawed. DNA selection and proliferation should lead to hermaphrodism but doesn't. Is DNA designed to increase itself or limit itself over time?

Why DNA? Or rather, why viruses and tardigrades?

Viruses reproduce by hijacking the host cell and creating replicates of themselves, each one a supposed mirror-copy of the parent virus. And yet generationally each subsequent virus is unique. By using the host cell, the virus can shuffle its genetic pattern while creating exact copies of itself. I say exact copies because at heart the virus has not fundamentally changed. Its function and role are still clear, to make more of itself, and nothing more than this.

Despite science fiction arguing for intelligent viruses and the like computationally speaking a virus is incapable of thought. There is even a question as to whether a virus is truly even alive.

This question also extends to prions which are nothing more than “malicious” protein molecules.

The thing is, my initial point about sexual reproduction has to be explained and applied to viruses as well. Viruses after all do not reproduce by mitosis like certain species of bacteria nor do they reproduce sexually. Their actions are more like a key fitting into a lock, thereby destroying the lock and creating more keys exactly like itself to destroy more locks.

The analogy is valid and useful because only if the virus “fits” into the cell can replication occur. This is why viruses are not universal infectors; a virus must be tailored to fit into the specific cellular structure of the species they are designed to infect.

But this ties into the question of why.

Sexual reproduction works by a cumulative effect of genetic accumulation, with each new generation having more than the previous one did. Asexual reproduction works by copying the parent cell, duplicating what was, with what is, with what will be.

Viral reproduction however spans the chasm between these two states. A virus must have another organism to reproduce but the act is not sexual. It is parasitic.

This differs from usual parasitic species in that the virus has no other existence apart from the host cell. Now parasites by definition use other species to function but viruses take the point even further; a fluke worm is alive apart from the host. In comparison, a virus only “lives” and does something more than seek out cells when in the process of cellular hijacking.

This point cannot be overemphasized.

Cells are the building blocks of life and DNA is the building blocks of cells. Four components make up DNA, guanine, thymine, adenine and cytosine. But there is also uracil, which is present in RNA but not DNA. Uracil breaks down to form thymine and it is theorized that the reason thymine is in our genetic pattern and not uracil is because thymine is more chemically stable.

Now why does this matter?

To piece out the origins of life one must piece out how our current life is, how our current life was and *why* both are present. DNA's creation is a fundamental part of the riddle because DNA is present in all forms of life and all of it seems to be composed of these four properties. But there was a fifth. This means that the structure of DNA could have been different in the past than it is now.

This means that DNA is not stable or was not stable over time, assuming this to be true.

Now how does this tie into viruses? Or rather how does this tie into tardigrades?

If viruses reproduce by hijacking host cells to replicate, tardigrades steal the genetic patterns of other life while simultaneously reproducing sexually. Tardigrades are capable of taking into themselves the genetic patterns of other forms of life and incorporating them into their genome.

As such tardigrades are the diametric opposites of viruses.

A virus takes the mechanism of the cell to manufacture new copies of itself while never incorporating enough DNA to truly create a new form of life. Since by definition it's kind of hard to argue that a virus is a lifeform.

In comparison a tardigrade, though capable of sexual reproduction, has a secondary means of gaining and incorporating new genetic material by adding the DNA of other organisms into themselves.

As such no tardigrade is simply the product of its parents but is also the product of plants, other animals, etc. This explains its toughness and its ability to survive. A tardigrade is not an organism, it is a legion, composed of many different species in its substrata of itself.

But both species illustrate the value of DNA and perhaps the clearest reason DNA exists as it does.

DNA is capable of structural change. The introduction of radiation can make mutation occur but even without radiation the influx and introduction of comparative genetic patterns together seem to have specific results.

The largest result seems to be the ability to shift, add or subtract DNA without the destruction of either the host or parasite occurring.

A virus can kill and a tardigrade is capable of adding DNA to itself but neither organism seems capable of the kind of alteration science fiction erroneously portends. A tardigrade can survive the vacuum of space, perhaps due to the influx of plant or some other animal DNA, but this does not transform the tardigrade into a plant or the exact type of the other organism.

A virus can hijack a cell but seems incapable of *becoming* a cell or taking enough DNA to properly alter its base nature into something *else*.

But perhaps there's more to this than initially supposed.

It occurred to me about the nature of composite lifeforms. Is it possible all life originally could steal the DNA of each other, taking on aspects of other organisms until at some point our genetic patterns congealed into a non-assimilator base?

My initial illumination regarded scorpions. Scorpions are evolutionarily extremely old and yet the mechanism by which an arachnid species developed both venom and a poisonous tail hasn't been explored.

Spiders after all envenomate using fangs. Fangs are an impressive weapons system, utilizing the spiders' strength and use of webbing, when it has webbing. Scorpions in comparison have no webbing and instead have developed both pincers and a tail.

One organism, one order of life divided its strategies in two diametrically opposite ways.

The ability to grasp prey as opposed to the opportunity to trap prey via a web is evolutionarily different as strategies go.

The thing is, what if our first arachnids lacked either trait but gained them by a process of genetic osmosis? That leads to a lateral move since where did the other gain the abilities, but what if the individual traits we have, referred once to individual species which slowly over time simply coalesced together?

If so then the process of evolution is less mere adaptation and more theft and if theft this can be proven by genetic analysis. I could be wrong but it's a curious theory and worth exploring.

But even if correct this is at heart a lateral move. It doesn't explain why DNA is used . . . except. If the first life was anaerobic and over time developed tolerance and need for oxygen then it stands to reason the *initial* purpose and function of DNA would remain intact.

If DNA has not changed since the emergence of microbial life, then there is no reason to think our DNA is designed for life *now*. Rather it was designed for life *then*. In a way all of this is similar to writing a novel; if one is given a novel without a beginning or ending one can still extrapolate the work based on what we do have, and the genre of the work.

The genre so to speak is romance. Sex is language, sex is commonplace, ergo sex was commonplace in one form or another. If we can extrapolate life now, we should be able to extrapolate life then. The difference is there is a significant break between the environment then and now. The oxygenation of the world killed off most forms of life. Ergo oxygen was poison so life before this event was designed without the need for oxygen.

Yet the DNA of these organisms is the same as our DNA. Ergo the potential for life at this point in time, the means, and the mechanisms must somehow be in our genome as well. This poses the idea that although DNA is the building block of all life its function is tailored by its composition with the environment itself.

Simply by existing DNA is capable of tailoring itself to every environment, to every structural possibility. Now why does this matter? Because we can go back, that's why.

A simple experiment would be to present bacterial life in an oxygen-less environment. It's a curiosity. Can we change the functions of a bacterium used to oxygen into a bacterium which does not need oxygen?

But will this prove the purpose and origin of life?

No.

But. If we place two groups of bacteria in such an environment, one already capable of surviving an anaerobic existence and the other not, will the more helpless organism feed on the DNA of the more resilient organism? Will the weaker species take on the properties of the stronger? If so, this provides the potential explanation for multicellular life, sex, and why life originated the way it did.

Life began in one environment, simple and sexless.

Life developed in all subsequent environments at a deficit, forced to adapt in the absence of its original environment, consuming what it needed from portions of itself/themselves. As such, if correct, DNA is the replicate means by which organisms adapt. All of which is well understood but what is not well understood is the initial conditions by which this means of evolution developed in the first place.

It is possible that three diverse factors were at play in the formulation of DNA becoming the building blocks of life. It is stable as a chemical process but moreover is stable at many different environmental levels and domains.

Secondly, and this ties directly into the point about composite life, it is a chemical process which can be stolen by other organisms. DNA is called the building blocks of life but a better approximation would be the currency of life, and any currency can be appropriated dependent upon the resources of the individual at hand.

The greater one has the greater one can have, whether in commerce or genetics. As such multicellular organisms, which by definition are more legion than individuals, may be the evolutionary end point of a process of cellular appropriation begun billions of years before.

But third, and perhaps most interestingly, DNA explains concepts like immortality, why the Earth was ripe for life, why sexuality matters as opposed to asexuality and even how tardigrades work.

I'll start with sex and go on from there.

Sex is the biological process of cumulatively creating new life. At its most fundamental it is the source of discussion and concept, art and morality, but at heart, it is a rather implicitly ordinary act. Stripped of all hyperbole or rhetoric or morality sex is the ability to combine the genetic patterns of multiple individuals into one to create a random new organism with traits of both parents.

But DNA, and especially its uses at the Precambrian level explain how sex began and also paradoxically how immortality began too.

If the earliest forms of life were similar to either viruses or tardigrades then two methods of reproduction emerged, one uniquely parasitic and the other variable. Viruses can only lock into a single prey organism while tardigrades can steal the DNA of any organism, while never losing the ability to reproduce sexually.

As such one might ask why the stealing of DNA did not itself become the primary means of reproduction, to which I say it did. The earliest life competed not over food but traits, traits which were then replicated and added and re-added, slowly either branching away or coalescing into new forms of life.

But how does sex fit into this?

By viruses.

A virus is capable of only infecting certain organisms now, but there is no reason to suppose in a Precambrian environment this was also true. Stealing genetic patterns only steals new traits but still leaves the organism at the mercy of preexisting predators.

By reproducing sexually, the traits are scrambled in such a way as to make it less likely for a virus to infect them, which at such an early stage could have potentially been fatal.

But predation alone would not explain this; the changing environment coupled with this would.

Sex introduces random mutations and since random mutations by definition are random and since traits most accustomed to survival propagate while traits least accustomed to survival do not, at some point the emergence of sex turned on, literally as opposed to metaphorically, organisms' capacity to breathe.

But how does this tie into immortality?

Certain species are immortal. Certain kinds of jellyfish for example. Jellyfish are evolutionarily quite old and a particular species, *T. Dohrnii*, is known to be able to revert to an earlier stage of its life cycle. It can become a child if injured or damaged.

This species can reproduce sexually or asexually and is capable of budding off, creating in essence clones of themselves while still being capable of mating. In essence, this organism has the capacity to both clone and reproduce in a sexual way but what matters is the process of budding.

Since the new jellyfish can bud from a parent polyp, they are copies of themselves, but new eggs are also

fertilized sexually. It is the combination of these reproductive abilities which may explain why they can revert so easily.

Sexual reproduction after all requires one crucial element to function, namely the death of the parent organism. Once a species is capable of cumulative evolution the only direction is forward. Going backward leads to extinction.

Death, the great stumbling block for most religions and the terror of an end for most people is nothing more than the counterbalance of the equation of a sexual life. If one can reproduce sexually one can and will die.

This is because of the point made earlier, namely that the first life existed in an environment hostile to us now, namely one without oxygen. Evolution allowed the survivors from this to emerge and grow but death allowed new niches to open for new life to *grow into*. Since the only means to evolve species-wise is for individuals to be removed from the equation our lifespans are kept at a rather set rate; even bearing all other means of our demise old age will lead to a failure of our systems and our grave.

This is because what matters is not the individual but rather the chain of DNA moving, like predators down time's avenue of itself. So long as the genetic patterns can be randomized each time the potential exists both for continuation and extinction, but either way *for change*.

Evolution is death to the individual and life to the whole.

But if one could reproduce sexually and asexually, or if the number of copies exceeded their use, then sexual reproduction wouldn't lead to the continuation of the genome. Rather the number of copies would and without the need for sex so long as the individual survived or could survive that alone would suffice.

The concept of sex being the little death is more apt than anyone realized.

Now, not all asexual species are immortal, and not all immortal species are jellyfish, but many creatures of the ocean do have impressive lifespans, even if not truly immortal, and this may reflect a time in our evolutionary past when death was not possible due to old age.

Our ability to age limits our chances to reproduce, which further puts pressure on us to find a partner quickly. What we call a biological lifespan is the end development of a means of limiting our chances to reproduce indefinitely . . . which raises a rather interesting question. If the goal is randomization would not an infinite lifespan lead to infinite variety in offspring? As already answered for sexual life to develop properly the parent organism must cease to function . . . because the cumulative effects of preexisting organisms will clutter the genome.

In the case of the immortal jellyfish, the solution is rather simple. Predations limit numbers but to further limit themselves cellular rejuvenation can heal and allow copies to survive, though in this state sexual reproduction cannot happen.

There are four strands at work here.

Viruses take in, or rather are taken in to augment host cells to replicate. The process of replication does not add to the virus in the sense of evolution but rather is the means of coercing the enemy territory it occupies into self-destruction. Viral replication is at heart a purely destructive act though not a malicious one; DNA is subsumed and grafted into its offspring at the cost of the host cell, leading ultimately to the death of the organism which the virus infects.

But viruses are neither mortal nor even immortal. They are programming, a search and destroy series of proteins and nuclei having no more biological life than a fire. A fire would have more definitions of life since it can ingest and even reproduce like a bacterium, through mitosis. (I am not mentioning bacteria in this description because bacteria can divide by mitosis or reproduce in a pseudosexual way, points covered by jellyfish already.)

Tardigrades steal DNA to shore up damage while also allowing sex to occur thereby increasing their hardiness but at the cost of providing death. Tardigrades are capable of surviving tremendous damage but this occurs because of their secondary means of reproduction, i.e. DNA stealing. By being also sexually active even the hardiest tardigrade is not genuinely immortal.

In comparison immortal jellyfish can rejuvenate to earlier forms, resetting the clock biologically but at the cost of being capable of being devoured. Age is not the culprit of their deaths but predation is, because due to the vast copying nature of the species even the loss of most of the biomass will not limit the survival of the species in total.

Finally, we have ourselves.

If human beings cannot steal DNA from other organisms then our only recourse is to combine DNA among

ourselves; our capacity to tailor in new strands of DNA has been cut off and replaced by the only ability we have, namely to shuffle the DNA we already have in the following generation to come.

For this reason, biological death has to occur to both limit the previous generation's ability to linger past its point of subsistence and also to form a limiter on our chances to reproduce. A truly immortal organism capable of sexual reproduction is an organism capable of eventually repeating itself. A truly immortal race even with the sheer infinite number of sperm capable of each sexual act will sooner or later repeat itself, i.e. create mirror copies of those who came before.

But sex is about the singular act leading to a singular outcome, either in the creation of one unique individual or a few who are biologically identical, (twins, triplets,) but never being repeatable again.

One cannot have two sets of twins, (four genetically identical individuals,) during two separate pregnancies. But if immortal one can.

That's the price of immortality; genetic irrelevance.

To perpetuate the species the individual must die.

To perpetuate the individual the species must stagnate.

Sex prevents the individual's ascendancy and so prevents the species' extinction.

To be immortal is to be standing still. DNA in its current use as a means of adaptation must lean toward shuffling, hijacking, stealing, or replicating.

But most importantly DNA is capable of metabolism at both the anaerobic and aerobic levels.

That's why DNA is used as the basis of all life.

(Additional point:

Curious.

In a total population of six, three males and three females only one pair can successfully reproduce, or one male to three females. I say only one pair because there are usually complications in pregnancy or just as likely incompatibility with pairs.

At most three pairs can exist, but usually in nature, this is not the case.

In nature, potential offspring is usually the result of only a select few, not the total population itself.

In a limited population, the potential for reproduction never successfully reproducing can be as high as 90 percent.

In comparison let us assume in a population of one hundred fifty pairs, leading only to fifty children. Possible but unlikely. In nature usually, one male has an overwhelming advantage to mate with many females. Ergo out of 100 many individuals will not reproduce and this only presupposes male-dominated reproduction.

Many species like social insects have females dominant sexually, Except.

Social insect queens differentiate male sperm, rip off their wings and entomb themselves. One male plus one female equals thousands of offspring depending on the species involved. Evolution still favours strength to the male in reaching the female first, the only difference is one female reproduces a thousand plus times as opposed to one male and many females.

Male insects often die after sex, their purpose used. This means the mechanism for them applies to us and other mammals; one male to achieve multiple offspring.

The difference is the social insect does it with just one partner.

But this ties back to my original question; all things being equal why wouldn't hermaphroditism work for *all* species?

Thought experiment: would there be a world where all life evolved from or were hermaphrodites?)

4A) Size differentiation; given the ubiquitousness of the environment and species why are tardigrades microscopic? Does size convey an evolutionary edge? Why can tardigrades steal DNA and we can't?

4B) Plant-to-insect ratio; insects evolve in tandem with green plants however green plants with chlorophyll didn't show up. Flowers are evolutionarily designed to attract insects meaning plants evolved along the UV spectrum of insect sight.

Co-mutual symbiosis is based on the perception of the other organism. Empathy?

Mammals are less numerous than insects, and insects are less numerous than plants, all leading back to

the energy of the sun.

Each subsequent tier in support of the organism is always greater than the organism itself. Plus, insect vision translates to flower formation. They could use the insects to change themselves. Not exactly a question to assume, more a supposition to explore.

4C) Why is an intelligent species a premium of evolution?

Out of all life, only 5 or 6 here display the kinds of intelligence deemed essential for consciousness. Ravens, apes, humans, dolphins and certain social insect groups all demonstrate problem-solving and innovation. Why them and not everyone?

4D) How did DNA tie into the composition and makeup of the Earth itself? Would another planet with greater or lesser minerals develop an entirely different sort of life?

Additionally; human DNA is two strands interlocking but could alien DNA be 1, 2, or 12?

Size differentiation and temporal differentiation are crucial elements of evolution and DNA theft itself.

The reason they can do this may be because they are from an older evolutionary epoch than ourselves. More complex multicellular life came after the simpler models but this does not explain why DNA stealing is ubiquitous with tardigrades but impossible for us.

But why? What is the evolutionary advantage or disadvantage of size and time? And if there is an advantage to either why is there no such advantage to us?

Let us first consider both parameters in relation to the universe and to Earth itself. If many generations can be formed in a short time this leads to greater genetic variation and diversity, but “short time” is misleading. A four-billion-year-old Earth is not even middle-aged. In comparison, a minute is a lifetime for certain forms of bacteria.

Time and space are significant in limiting and expanding patterns of behaviour and nature to us since our time and space dictate ourselves.

Now time, being a relative system, can help explain itself.

If a planet like Earth is 4 billion years old, then any lifeform exceeding four billion years is impossible to have arrived from Earth. Likewise, a long-lived species like a glass coral or an immortal jellyfish cannot exist without there being a substructure of previous lifeforms which have less time to develop than the organisms otherwise shown.

I say less time because generational limitations dictate generational diversifications.

For an organism like a human to develop first there must exist the bacteria by which sustenance is achieved. It is inconceivable for a bacterial organism to outlive the human host it resides within and upon, just as a man can't outlive the Earth he dwells upon. Each species must be limited by the species to come after it since each subsequent species is built upon the species which came before it.

There are fewer mammals than insects, fewer insects than plants, all tying directly to the light of the sun, each substratum dictating that just as there are more organisms per layer there are shorter times between generations involved, up to a point.

A redwood can live a thousand years. They are plants and belong to the structure by which insects gain sustenance but will easily outlive most organisms. That said generally speaking plants do not live long, and taken as a group the gradations may line up.

Does this then mean humans are at the apex of the temporal food chain? No. We are after all merely components of a larger biomass and we stand neither at the extreme of one end nor the extreme of the other.

This is a general principle not to be taken as gospel. Man is no more adept at living forever than a redwood or an immortal jellyfish. What we imagine to be the length of our years is merely our perception of them, and having more or less neither makes us better or worse. Life is meant to expire but when it expires this does not then invalidate the life we had.

As such our lifespan is merely part of a gradient and is quite ordinary.

Now what does this mean concerning the tardigrades?

If we assume the tardigrades evolved at the time when multicellular life was just beginning their lifespans wouldn't be that unusual. So, how long does a tardigrade usually live? Without the state of tun, a tardigrade averages a lifespan of less than one year. If we factor in their dormancy phase upwards of sixty years are possible.

So, we have a species capable of long life whose origin is dated from the Cambrian age, approximately 550 million years ago. What can we induce from these facts?

They can withstand extremes and enter dormancy which makes the species interesting in terms of both time and size. No other larger multicellular animals have developed the means of surviving so many extremes, nor can they. Nor can larger organisms subsume the DNA of other living things, adding them to their genome.

But does the size of the organism tie into this, or is there some other mechanism involved?

Size factors in only to the time at which they arrived on the evolutionary scene.

There may be other larger organisms from the same epoch that possess similar genetic stealing abilities which may have died out. An absence of proof does not necessarily lead to an absence of that which is not yet currently proven. But in the case of the tardigrades, their small size does bestow an obvious advantage; predation.

Colonies of tardigrades form the essential backbone of many predatory species that follow the tardigrades into new habitats to feed upon them. The greater the number the smaller the relative size and the greater the need for more numbers the greater predation they suffer.

But how does any of this impact the discussion on the origin of life?

Predation is one of the components I mentioned earlier for the emergence of sexual development and the creation of the species which we are. A crucial element of predation is size.

Predators attack in one of two ways; either a large organism preys on smaller beings, or a large group of smaller beings preys on a larger organism. Seldom does a large group attack a single small organism; the costs outweigh the supposed gain, and by dividing a small meal among many no satisfaction is achieved.

This relevance upon either size or numbers dictates both the type of predator and the types of prey. But where must either start? If we assume a priori emergence from the smallest size allowed, from bacteria and viruses achieving the same ratios as all other predator-prey relationships then the size of a tardigrade is no more unusual than the relative size of a deer to a pack of wolves.

Origins must begin small and move on from there. If all bacterial life began as our origins it stands to reason the ratios there apply to the ratios here. This means the sizes involved begin there and do not deviate sufficiently.

A tardigrade can no more become the size of an elephant than an elephant the size of a tardigrade and for the same reasons; their link in the predator-prey relationship prevents this.

A giant tardigrade is no more evolutionarily advantageous than a giant human; their piece in the tapestry of life is negated, their need for colonies, their mobility, and their potential for reproduction. (Mind you, when I say giant, I am thinking of a tardigrade growing to the size of a worm or some other visible organism. By which in comparison a human at such a size would equal the relative size of a city.)

But do these points indicate their ability to steal DNA and do these points indicate a pure advantage based on size? As I said only concerning those who prey upon them and what they in turn prey upon.

But why then do they have the ability to steal DNA and we don't?

If correct they only can incorporate other foreign DNA during tun, a process which is nonexistent in humans. But why is it nonexistent? Because tun was an evolutionary advantage against predation which humans lack because humans cannot achieve such an outcome. Our biology differs markedly. Notice I said earlier that predation refers to any external force capable of ending us, not merely other animals.

In this context, the predation of the environment is enough to lead to the emergence of tun which should lead to the emergence of tun for other predatory species as well but does not. This leads to the question of whether stasis can be achieved for larger organisms.

Perhaps tun occurred due to a specific environmental concern which is no longer present in the same way, or perhaps life chose a strategy that it cannot choose now. No, I'm getting ahead of myself; think about it a piece at a time. I started with the basic question of an advantage based on size and I believe I have an explanation for this.

Tun in comparison allows tardigrades to steal DNA and implement it in their physiologies. Ergo the simplest explanation to explore is if larger organisms somewhere else could do likewise. Is there a planet somewhere where all life can achieve this same trait, where all life can enter stasis due to desiccation or heavy bombardment of radiation and if so, why can't we?

Because DNA gets fixed at a certain point.

The same trait that allows shuffling of DNA means the cards dealt can only be what is possible in our genome. The small size didn't make tardigrades DNA stealers, them being DNA stealers meant they could afford to

be a smaller size.

Predations led to this but also larger sizes wouldn't help during time, which allowed DNA stealing to take place, which in turn allowed their survival to increase with their implementation and addition of new DNA into their preexisting genome.

The other questions provide variations of these points.

The symbiosis of plants, and their "empathy" in tailoring themselves to insects, ties into predation just as surely as tardigrade size does. But with plants, they are tailoring themselves against the predation of the organisms which they need to survive.

Flowering plants are designed to attract insect species they need to reproduce but it may well be they are also designed to repulse other insects or similarly perceptive species against them.

This is only a theory and has no basis yet in fact but it might explain why flowers exist. They are meant to attract some species and repulse others perhaps.

But this then ties into the issue of intelligence itself. Why be intelligent? What evolutionary advantage does true intelligence serve?

Adding the word "true" sort of invalidates the point of the thing, doesn't it?

Intelligence after all is a dependent variable of use and usage. To know that the Earth revolves around the sun has no evolutionary advantage to a species living in a cave, any more than it has relevance to a species that will never leave Earth. Knowledge of chemical formulas or how metabolism works has no bearing on species which don't need to know them. Humanity in comparison does need to know all this and more to survive.

But why, and why is this sort of intelligence at such a premium?

Because of our biology and our position in the food chain.

Humans are not powerful.

As a species, we lack many of the useful traits needed for survival such as claws or fangs, poison or physical strength. We lack these abilities leaving our minds as our one true weapon against the dark, both literally and figuratively.

But why then us and no others?

Ah, but there are others. Ravens and apes, dolphins and even social insects all display intelligence. Our mistake is transcribing our particular nuances of intelligence as somehow being the only signs of intelligent life elsewhere.

Assuming all other forms of life display intelligence what sort of intelligence differs from them and us? Our form of intelligence seems to be geared toward one massive trait, perpetuation of itself.

By this, I do not mean ideas. All intelligence species have them. What I mean is we have developed rather arcane formulas to turn our ideas into something else, something concrete and real. We call this written language and we call this art.

Art is the fine and final point of any language when the multiplicity of meaning transcends any interpretation and becomes every interpretation. Good art is revered, great art is immortal and never dies.

But why can we produce art and a raven can't, no more can a colony of ants.

Because art is tied to sex, a trait not needed by ravens or ants.

Now there is some confusion regarding dolphins and whales and their songs; are these songs truly music or are they simply language? One can argue one way or the other but the key point is there is no way for a dolphin or whale to *preserve* their songs after they are sung.

In comparison human beings have a desire to not only create but preserve and by using preservation they can continue the act of sexual communication beyond the actual moment itself.

Now why say sex and not some other emotion or desire?

Because as I said earlier sex is language and the language used by ourselves is meant and expected to last. A stone statue can provide the role of fetish and fetish is nothing more than the extrapolation of one desire forced upon the backdrop of another reality.

Which means our intelligence must depend upon abstraction. And that does differ from the other organisms.

Now what is abstraction?

It is the taking of one thing for another. These words do not exist in reality. I am not writing to you who are reading these words, rather your mind is translating specific patterns of lines and colours into thought and this

thought is further translated along your perceived perception of your intelligence.

What I say can sound either good or foolish to you based only upon what you know and based only upon what I know and nothing more than this.

Abstraction allows human beings to condense vast amounts of information into concrete and moveable forms and this further expands our capacity to illicit sexual interest in one another. Skills once demonstrated and preserved are seldom lost. The human capacity for abstraction allows information to become immortal and thereby allows some small portion of themselves to become immortal. Just as genes transmit information into the future of the self so too does the use of art.

And the creation of sex from a distance is achieved by art of many other kinds.

This then provides the background for why we are intelligent the way we are. And even why other species are not intelligent the way we are.

Abstraction permits language comprehension and development to emerge in a splintered way, i.e., to be placed in mediums not originally intended for. Speaking should not be visible any more than what is visible and soundless could be heard.

And yet both are quite literally true.

It is the human capacity for abstraction alone which has translated to our ability to both create and appreciate art, which in turn has led to our ability and capacity to preserve art. And out of preservation new art can be created and achieved which in turn leads to more and more, etc.

In the same way, DNA can be shuffled in our genome to produce new works/children from the exact models of the old, thereby preserving what was while achieving what is and likewise what will in the future be.

Finally, however, the last piece I think cannot be adequately explored save as a thought experiment. Can our DNA affect and influence our world any more than can our world affect and influence us? I can't say, but what I can say is that it would be fascinating if our biology did indeed affect our world more than our world affected us. Of course, bacteria developed the emergence of oxygen, but I am referring to a total symbiosis of existence as opposed to merely the formulation of our atmosphere, etc.

Still.

It would be fun to dream.

Moving on then.

Last problem to solve.

5A) Last problem/question- Assuming life is commonplace elsewhere in the universe would it need a planet to evolve on, either like our own or alien, or no planet at all, and if so, how?

These are the broken questions to solve the riddle of the mystery of the origin of life.

This question forms the rough outline and the fine touches of everything which came before it, and I will explain why. Everything I have done so far has been geared to answer, not one, but two questions.

Firstly, why and how life developed here, and secondly, why and how life might develop elsewhere and the sorts of forms it might take.

I have mentioned tardigrades, immortal jellyfish, scorpions, social insects, mammals and birds. Our entire biosphere is composed of these specific organisms and many more, but why these and not others?

And why Earth and not Mars or Venus?

Before one argues about the lack of water or the extreme heat of one planet or the other consider that Earth was exactly like Venus about two billion years ago. It may have been even worse.

Venus is likened to a greenhouse world on fire but Earth was hardly different. And since bacteria didn't even need oxygen why assume Venus is bereft of life?

The extremes which we perceive are not necessarily the extremes which are.

So, I return to my initial question; why would life need a world to develop on, and need it develop upon a world familiar to us or unfamiliar, or alien, or none at all?

Planets do have singular advantages above the rest of the universe. Physical properties which allow life to cling to and grow from. Whether gas giants or rocky worlds, planets can insulate against the void, against radiation, against the backdrop of nothingness, coalescing vast properties to a single point.

But where then do the differences form which lead to life?

Ours is a world of contrasts. Imagine instead an insect planet, a scorpion planet, a garden world.

A world inhabited only by insects would have to potentially be like Earth, but would likewise have to have certain aspects and properties different from the Earth we know.

Gravity for example would either have to be lesser or the ratio of oxygen in the environment would have to be much greater. Oxygen saturation of the atmosphere was greater at certain points in the past but even though this allowed insects to increase in size it did not make insects the sole possessors of the world.

For only insects to develop irrespective of any other mobile lifeform would mean at some point other branches of the evolutionary tree were cut or never developed at all. This would mean either vertebrate life did not exist or could not exist for some reason.

And this would mean that no matter how similar this world was it could never be Earth.

The same is true for a scorpion planet, a jaguar planet, or a world where mammals only developed leading to small colonies of rodentlike creatures no larger than ants.

Life could theoretically develop on such planets but they would not be Earth and the evolutionary processes involved would have to be fundamentally different.

Now why does any of this matter?

In seeking the origin of life, one is not seeking the origin of life, one is seeking two distinct things; the emergence of the first spark and secondly the emergence of each branch from that first existing seed.

Knowing the chemical processes by which the spark was achieved does not itself answer the broader question, namely why are we here and why is life the way it is?

It is entirely possible to describe and demonstrate the chemical functions, methodologies and methods of a human cell. It is even possible, and dare I say easy, to sequence the genome in such a way as to know chapter, page and verse (metaphorically speaking,) where everything fits together.

It is not easy to go from point A to point B, to show the conclusive steps of the chemical to the biological to the actual, i.e. ourselves.

If bacteria were able to survive for billions of years why change?

If insects are more numerous and better able to survive than mammals why have mammals?

If Earth is the best spot for life where is the next best, and what sorts of shapes will those lives take in turn?

The point of this essay, this discussion or dissertation is not to give absolute proof of the origin of life. Even if my theories are one hundred percent accurate proof would elude me and since no matter how accurate one's theories are it is inevitable they will be replaced by better models, this is not the point of my writing here.

The point is to elucidate certain basic questions which are seldom asked, articulating certain assumptions and whether they are correct or not. One of those assumptions is whether Earth would have harboured the kinds of life we have now had something different happened, or if life like ours could develop without a planet to dwell on.

This means assuming that a planet need *not* be the source of life. There are preexisting theories along a similar line, ranging from panspermia to the Gaia Hypothesis but it does lead to a fundamental question of whether the reason we can't find the origin of life on Earth is because life did not originate on Earth.

It is even possible multiple worlds collectively came together symbiotically to form life.

This is at present nothing more than science fiction. I could no more prove any of this than Wells could prove his Martians, but since the main criterion for my exploration into this subject is my own, then my own interest leads me to ask certain questions or make certain assumptions whether accurate or not to assess the hopefully true nature of the situation.

So. In the first place could life develop irrespective of a planet on which to dwell?

The answer would be no, except certain species, tardigrades foremost, have proven to be able to survive the rigours of space. Were this a bad science fiction work I could even argue tardigrades were aliens but like I said this is not meant to be a bad science fiction work.

Now. Remove a planet from the equation and what are we left with?

The void of space, temperatures reaching absolute zero, nothing to grab onto, no reason for ecology to develop, no reason or ability for any chemical reactions to work by which life should come into being.

The addition of a planet should make everything work perfectly. Except.

Were this true why then did it take two billion years for life to get started and another billion for multicellular life to form?

What was the advantage of multicellular life at an earlier time?

What was the potential for life to even exist during the first two billion years of Earth's history?

This means something rather significant which is often overlooked.

In so much as life developed on Earth, it cannot be argued or proven life began on Earth. It can only be proven that life emerged here.

The distinction is subtle but clear.

We have no proof of how life came to be and so could easily argue life came elsewhere and settled here. Do I believe this myself? No. I do not believe this for the simplest of reasons, namely that if true life would likewise have developed on Mars, Venus, Titan, Europa and even Io. If the first life was anaerobic and capable of metabolizing and existing on the barest thin edge of a hell-ocean, (chthonic ocean? Chthonic sounds better,) then it stands to reason that the same seed-emergence of an extraterrestrial origin would have equally seeded various other worlds and settled life to bloom and upwardly blossom there too, great swelling fungal jungles upon Venus or white-bodied mile-high flowers upon Mars.

I'm being poetic but the implication should be clear; if panspermia were the correct means of our origin it would have been the means of origin for at least twenty other worlds in our solar system.

And yet we seem to be alone.

Imagine if one could go back to the origin of each world and lay seeds of bacteria upon them, or small organisms, and then wait. Theoretically by the current age each planet and moon would have to have evolved a plethora of organisms, some humanoid, some not, based on insects or tardigrades, nematodes or bacteria or scorpions or carnivorous plants. Or moths. Or men.

Panspermia as a theory is this but this has happened and if life is not repeatable nor replicable in this context then as a theory it leaves much to be desired.

So merely possessing a planet does not indicate life nor does the absence of a planet indicate life either.

Imagine a shark of the void sea, a great beast designed to navigate the stellar winds. Poetic conceit I know but for such a creature to exist irrespective of a planet it would have to come *from* somewhere, to have emerged from some place. The void does not sustain itself any more than it can sustain any other living thing.

I mention such a creature as another thought experiment, as something to imagine which later we'll regret. I say regret because if such a creature did exist then our entire conception of evolution would be utterly wrong.

If a planet need not exist for life to form upon it then the expectation of life jumps from the astronomically common to the ridiculously common. If true. If accurate. If I'm not mistaken, which I probably am.

All this preamble is really about one thing and one thing only; why did life develop here when it did and why not earlier, and why only here?

There are arguments about the Goldilocks ratio, our position in the system where water becomes solid and liquid, but this anthropomorphizing. Had all life developed successfully on Mars our native Martians would argue the same thing, that their position in the universe dictated their placement of life taking root and holding there securely.

One cannot argue how right one is if the only true proof is simply that one is here. This is a logical argument in reverse.

But I digress.

At its heart, a planet like Earth is considered our home, lifelike, pristine, but our history shows time and again it is anything but. Mass extinctions, extremes of temperature, endless predation and the gross incompetence of most life never becoming "sentient" all lead to the conjecture that life's emergence is more accident than divine providence.

Which merely puts me back where I started from. Do we need a world in which to develop and does all other life need such a thing as a world or even a world like ours is and more importantly *has been*?

The short answer is yes. Life needs a world if for no other reason than the chemical processes involved cannot exist in the void nor the heart of a sun.

Does this mean life once forged on a planet needs to stay on a planet though?

Can world-bound life evolve into spacefaring life?

Short answer, yeah.

I say yeah because life once established seems capable of rapid adaptation, even to the void of space if the

tardigrades are any evidence of this. Ergo life once established planet-side may indeed be capable of leaving said world and voyaging elsewhere. Does this matter?

I don't believe panspermia explains Earth. But I do believe at some point Earth might explain panspermia. If life emerged here, it may emerge elsewhere from Earth, mutate and evolve across other planets, and other planetary systems in time.

In this context, my essay becomes less a treatise on why we're here and more a treatise on where we may be going, how we may change and evolve and what our descendants may evolve into. If we went from single-celled to multi-celled in two billion years, if we went from asexual to sexual in millions of years, if we went from gene-stealers to DNA shufflers in millions of years, if we went from single to composite beings in hundreds of millions of years then what will come next in terms of life and development both on Earth and abroad? Across what other shores of what other planets will our life and lifeforms come into being and where will we be going in the next two billion years?

Damned if I know. But I damn well want to find out.

As a final point, one must consider lastly if we will all coalesce at some point, our multi-celled existence becoming again single-celled which might again last billions of years. If true then the origin of life is obvious. What we were we became again. It is entirely possible life merely cycles, our past bacterial origins merely being the intermediate phase to previous multicellular lifeforms somewhere else. I'm not arguing panspermia but simply a thought experiment as a last piece to explore.

Is our inability to find other life in the universe because they do not exist or rather does all life move in waves, bacterial to larger than smaller and while we are here as multicellular sexual beings most other life is currently in its bacterial stage?

This too does not explain the origin of life. But it may explain the reason we seem to be alone. We're all split up, little pieces of a greater whole with no place to go, not even upward into the sky. And the only thing we can do is replicate and produce the next generation in the chain, further split and but further come together forever until either we walk elsewhere in some future age or coalesce again into microbial organisms swimming again in a chthonic sea as the sun becomes a red giant and the oxygen recedes into the stones and the world seems to end, again.

Epilogue

I had mentioned earlier several exoplanets of which I wished to use what I called "laboratory settings." I selected those worlds most useful to me in this context and have arranged them here.

GJ 1214B- Water world.

HD 126614AB- Highest metallicity

Kepler 271B- Anti-metal world.

HD 13199AB- 3 suns.

Coku Tau/4- Young, only one million years. Or V 830 Tau B- Youngest.

PSR B 1620-26B- Oldest.

Also

Denis P J082303.1-491201B- Most massive.

PSR B 1257+12A- Least massive.

HD 20782B- Most eccentric orbit.

Gliese 581c- Crimson planet, black jungles.

I left these examples of exoplanets until last for a reason.

Let us assume that all of my suppositions have been correct. Let us assume that life exists and can be formed only at specific times in a planet's history. Let us further assume a need for balance in this, a rectifying system of the organic designed to augment the inorganic.

What then might we find, in terms of life, on these various worlds?

Let us start with Coku Tau/4.

At one million years this planet is embryonic in terms of planetary development. Earth at four billion years is middle-aged and expected to survive another four billion years easily. In comparison, Coku Tau/4 is barely a blink in the Earth's eye.

It would therefore be easy to argue finding life here would be utterly impossible, but I disagree.

Bacterial life exists in a state of moments. Ergo the potential for bacterial life to exist is not nonexistent, depending on the methodologies of life employed there. But finding multicellular life would be impossible or if possible, such life would exist in nanoseconds, birth and death subject to the same state as quantum uncertainty, neither existing nor not existing. And this is theoretical and more in the realm of science fiction than fact.

Let's compare this with PSR B 1620-26B.

One would expect, regardless of anything else, life to have developed here multiple times if only because of the vast array of time present for this world as opposed to any others. So, what sorts of life could evolve here?

If one assumes a similar projection as Earth, regardless of environmental points, then the stage by which multicellular life has developed should be in the distinct past, as far distinct as single-celled organisms are for us.

Should this mean a new coalescing, an ecology based upon larger organisms, human-sized or greater, capable of stealing the DNA of other organisms, slowly augmenting themselves as a result?

Imagine large herds of eight-limbed translucent creatures stumbling upon vast plains grazing upon organic lichen seas, taking on aspects of those plants, maybe even developing photosynthesis or the ability to break down stone to further gain sustenance from the earth itself.

A possibility, if nothing else.

What about GJ 1214B? A world covered by such vast oceans should easily harbour the most diverse forms of life, assuming the life in question evolved to take advantage of water. But what sorts of life could exist? Creatures more massive than blue whales, variations of cephalopods as large as buildings? The easiest place to find life may well be the hardest to decide what sort of life could dwell there, considering the plethora of life on Earth and how diverse our oceanic ecology is. And this doesn't even get started on questions of amphibian organisms who may need both environments to either breed or survive in.

Imagine an entire ecology centered around spending part of its life cycle in the oceans only to later emerge as adults like dragonflies upon land or conversely be born on land and spend their adult forms in the water, inverting our understanding of amphibian species.

And what sorts of possibilities could emerge? Hybrids of insect, amphibian and arachnid? Versions of mammalian life with eight limbs or twelve, or sixteen eyes? All conjecture I admit but it won't be conjecture in time if we find such life there, assuming humanity is ever able to send a probe to such a world.

The next three worlds fit together. HD 126614AB with the highest metallicity, Kepler 271B with the least and HD 13199AB orbiting three suns are all extremes beyond our comprehension. Old or young are definable concepts, as is water, but the level of metal in a planetary makeup may well influence life more than anything previously, not to mention the idea of three suns.

How would cells or chemical reactions work in such environments? Human blood contains iron; what sort of metallic compounds would exist for life here? Would ambient temperatures be too hot with three suns or would life develop such that all life would fulfil some form of extreme photosynthesis, taking in 90 percent of their nutrients from the suns as opposed to predation?

On a heavily metallic world would life evolve to consume metal or on a world with limited metal would life develop using something other than bones? (I know bones have no metal but the constituent properties, calcium for example, might also not exist leading to structural supports closer to light-weight chitin or even something unusual like cellulose.) And if one combined one of these worlds with three suns how might that alter life on these worlds?

(One possibility I conceived of was Portia spiders plus mayflies existing on a high metallic world which are silicon or iron-based forms of life.

Another point to consider is the potential extremes between worlds which are mostly a singular organism divided, or organisms so remote from each other on a genetic level as to not simply be divergent species but as alien one to another as they would be to us from Earth.)

How might that alter life on Earth?

At its heart these questions are not simply about the origin of life or life's purpose but rather life's

possibility. Who we are is not as important as who we might have been or who we could be.

These thought experiments as to life's origins are not meant to be proven correct. Even if I were there at the dawn of life on Earth it is entirely possible some biases would enter my equation and I would or might miss some details which are essential, or focus upon details which aren't.

Rather I have intended to try to piece together what makes us ourselves in the content of the Earth's history and out of this answer a more important question than origins; would we rather be someone else than so far as we are being?

If life's purpose is merely a regulation of the Earth, then is our knowledge of this the means to make us fully alive, or is the fear that all we've done is nothing more than a tiny link in a tiny chain, meant to be snapped and cut and not even the universe, in the final analysis, noticing.

A FURTHER THOUGHT EXPERIMENT: MONGRELS OR ANGELS

*Belief in a supernatural source of evil
is unnecessary. Man alone is capable
of wickedness.*

There is an assumption should we ever find intelligent life they will be either mongrels or angels, creatures of the cave or the divine.

The idea is that our technology and our place in history are so rare odds of another species having what we have are as unlikely as finding our twin on another world. So most assume we would find people of the caves since that was us eons ago.

But the idea of there being angels is a trickier thought.

Consider a species which lacks the squalid violence of ourselves sans our propensities for evil. This would be both more optimistic and more pessimistic than anyone imagines.

Let's take the optimistic point first.

In a galaxy of our size, there are supposedly a hundred thousand viable planets which have should life. Presupposing each planet had a history similar to our own, complete with extinction-level events, the emergence of one or more sentient species, nearly infinite varieties of plant and animal life and the ability of said sentient species to manipulate tools, there should be at one point in galactic history one hundred to fifty thousand spacefaring species.

I make this assumption predicated by the idea that a sufficiently advanced species would find a means to avoid extinction long enough to put at least two or three colonies beyond its homeworld, and, since it is highly likely for several systems to have multiple life-bearing planets odds of interplanetary travel would be accelerated there.

Assuming any of those details true odds of another species exceeding us are high and despite what science fiction writers tell you conquering other planets is actually difficult when there are trillions of others without species capable of fighting back, a spacefaring race need not be warlike.

So, firstly optimistic about finding them.

Now the pessimistic point.

Any such species would have eventually evolved to a point, assuming it is "angelic," beyond the boundaries of our evolution and if that thought isn't disturbing you haven't thought about this critically yet.

What is an angel after all? It is a being of unfathomable power so far removed from our perception as to be *uniquely alien*.

But here's the thing.

An angel is also, according to religious dogma, incapable of sin being outside of sin, and therefore *a creature of light*. But sin at its most basic is *simply* our evolutionary needs racketed out of control.

What is anger? Anger is an emotional state requiring force of will which turns a rational man into a monster, whether in the defence of his family or the murder of his enemies.

Envy? Envy is our desire for what others have, which in a scarce environment makes sense.

Lust? Without desire where would our children come from?

Pride, sloth, greed, and gluttony are all human desires magnified, and the reason they are counted as sin is because they exist out of proportion to their need. Human nature is based upon our evolution and our environment and so we can't exist outside our natures but our nature got us here *by being sins*. Without the capacity for excess, we as a species would have emotionally, sexually, psychologically and physically starved.

But now imagine creatures that are incapable of our vices, and so incapable of reasoning as we reason, incapable of anger or pride or even envy, incapable of sexual desire and depravity. They would be as alien to us as is *conceivable*.

Writers have often tackled the alien in terms of horror, making terrifying monsters whose appearance is meant to evoke primal dread. But instead imagine entire ecologies of species that lack all of our vices and have all of our virtues, beings that are incapable of deception or cruelty or violence.

Now the obvious idea taken from this is that such people would be sheep for slaughter.

But the reality is otherwise.

Any species that has reached this point did so by moving so far past us or evolved on worlds so alien that our capacity for sin could not exceed their capacity to circumvent us.

The assumption of a "good man" is the idea of a naive simpleminded soul easily misled but you are using our world as the template for what goodness is. In our world having some cynicism and distrust is good and proper but to those who evolved past us or whose need for our sorts of sin never developed it wouldn't make them stupid, it will make *us* more so.

Human society is built upon the idea of friction, that one is moving through life being dragged down by social pressures, economic concerns, mental and physical deterioration and the inherent conflicts which exist in our world, where each competes against each, decreasing our power continually no matter our technological superiority.

To those who lack such friction the ability to control us would be as effortless as our ability to move a pebble and if most sentient life beyond us is so endowed then humanity would not be considered even a mongrel.

We'd be a virus, one capable of being rendered impotent.

If the universe were peopled of angels, we would not be devils nor ignorant savages needing to be saved. We would be a cancer needing to be rendered benign, a virus meant to be eradicated. The cosmic indifference of eldritch gods would be preferable to the helpful smiling surgeons and their scalpels we might discover elsewhere.

THE ALIEN PARADOX

The more you know about aliens
the less you know about aliens

If I introduce you to a man and I say his name is Mr. Ysgairoth and he likes to eat air, can't stand sunlight, speaks into people's minds, and has five tongues, is he human?

Of course, you would say he isn't human, that no man is telepathic or can live on air or has five tongues, etc. But, through the assumption of *Mr. Ysgairoth* you automatically make certain assumptions, like that Ysgairoth is male, must be of a certain age since children are never called Mr. or Mrs., and that whatever Ysgairoth is must obey your expectations of at least a few parameters. Tongues, you know what tongues are, right? Eat, that makes sense. Even disliking sunlight is not only known but applies to a specific part of a supernatural creature's physiology, so suddenly even though he doesn't make sense as a man he starts to make sense as *something else*.

Let's try again. I mention a young woman and her name is Ygairoth and she is a tsalsual.

Now, what is a tsalsual? I don't say. But she is a woman, so tsalsual must be nationality, culture, or region. Now I haven't said that tsalsual means any of these things but because I have said Ygairoth is a woman you assume she must be human, and under the rules of humanity we go by gender, identity, age, ethnicity, race, etc. This sounds logical, right?

But we also go under disease, illness, suffering, deficiency, and pain.

He is mentally ill. She has a broken arm. He is blind.

Suddenly the word can potentially take on hundreds, thousands of meanings, but because we *know* she is a

woman we have at least some parts of the puzzle solved.

Unless the word “woman” means something to her that it doesn’t mean to us.

Let’s try this again. We have a man. His name is known to us so let’s call him Ysgaito which means “John Smith.” The name sounds like Ysgaito but both he and we comprehend the name as something ordinary. Second, he is a man, with two arms, two legs, two eyes, two balls, etc. I won’t mention his skin colour because that limits the thought experiment since human is not a colour it is a mind, that he has.

Now we come to the hard part.

He mentions Ylgairsoth.

Who is Ylgairsoth?

That is the deity he worships. Okay, we know about gods so we probe into the myths of his people. Maybe it is a creator deity, or war god or messianic archetype . . . but no. The more we ask about his god the less we learn. Everything we say his god is or could be he says it is not, and even if we say his god is nothing, absence, void, again he says we are wrong.

The concept of deity is understood, the man is understood to be a man, there are no extra limbs or language barriers or even some mistaken identity; he is exactly what he claims to be, and we are exactly what we claim to be. Yet this one attribute is skewered in such a way that the more we ask the less we learn. He is not being belligerent or offensive, he is trying his best but the only words applicable here are “no, you are wrong.”

How might we learn who exactly Ylgairsoth is if all our questions lead inevitably to the same non-answer?

Let me try one more time.

Elilaios Gamaliel is from the world of R’elithrylios. The planet is completely known to us. Its gravity is twice our own. Life evolved from a type of jellyfish which evolved to survive in the air and has somehow managed to adapt to the higher pressure through means of literally altering its physical properties. In other words, our friend Elilaios Gamaliel exists outside of normal matter and can even transpose himself through solid objects as easily as crossing through air. His species exists in a state of pure anarchism, having no leaders, and no followers. All young are spores released into the air and all have a racial memory meaning what one knows all knows. Individuality is maintained by the different experiences this group mind has, like trillions of the same person living slightly different lives.

T’lsylllyel Hraithimyr is another being from another world. She comes from a gas giant and has never seen land or water and has no concept of either. Unlike Elilaios Gamaliel she is blind, his species having evolved sight, hers not. In the gas giant’s “oceans of air,” she floats, much as he does, but she evolved from a plant, he an animal, she has no concept of any life beyond herself, he has a concept of trillions of past lives, and she is a predator while he is not.

T’lsylllyel Hraithimyr preys on her offspring, on countless small “seedlings” which are constantly created and destroyed by her, since she is the only representative of her species, or rather the only mature representation, in the entire world.

So. How might either of them explain us?

To a species of infinite variety and finite form what is man, what is woman? We have no racial memory, we need records to know our past, and we can’t remember either our births or the first years of our lives. We are animals, not plants, and we are a multitude, not singular, and we generally do not devour our own young.

Words like “sight,” “ground,” “ocean,” have no meaning to her. Morally speaking cannibalism is a neutral term, as is murder since she is the only sentient creature alive in her world. Can you murder something which is not technically thinking or alive? Can you murder a virus for example? You can kill it but murder implies a moral disgust toward the act. Can she be held accountable for the murder of her own non-sentient young?

And how about death? If you plunge through trillions of lives and they end but you don’t what is death, and what would death mean to you?

Let’s go back to Ylgairsoth.

He is a deity but under what rules is he brought into existence and under what rules does one worship him? We attribute worship as a sacrifice, as giving of something to something else. Ylgairsoth could require no sacrifice and no worship, one could make prayer to him by making no prayer to him, and this would be as valid a form of worship as any other.

What about music, art, beauty?

A painter makes a painting. Let us call him Calichalidor Tsaluel and he has painted a completely white canvas white. He titles it *Asciathylos* and considers his labour done. Another artist named Ylsgairyem from the world of dao'Xiasgoai scoffs at this first artist's work and he makes a painting, his being composed of obsidian blackness which he also titles *Asciathylos*.

Now what is happening here?

On Calichalidor Tsaluel's planet everything is white, the same shade of white. So, he has made great art which the people of his world appreciate. And the title means "life."

Ylsgairyem comes from a world exactly like Tsaluel's own, where everything is the same shade of white yet he has managed to create the colour black, and this he has titled "life."

What is happening here?

In all respects these worlds are mirror copies of the other yet by examining one world which is exactly like the world one comes from a further exploration is made, leading to something the opposite of what is expected. Two artists in the same situation titling their masterpieces identically come to opposite perspectives *despite* being mirror copies of each other.

If you can see yourself most clearly, would you admire yourself or be disgusted by yourself? That is not an idle question to ask.

Now what does all this mean? Where stands the paradox I mentioned earlier?

The more we know about the strangeness of our universe the more we assume life elsewhere must differ from ourselves, and the more radical the difference the greater the assumption we think we will be right. Life on other planets if described as humanoid must not act as we act because that would stretch credulity. However, since our frames of reference are ourselves at a certain point no matter how alien we try to make something it all falls back to our frame of reference, either in challenge of it or in acceptance of it.

As such no matter how many worlds we explore mentally or physically, no matter how many books we read or assumptions we make we will never know if we were right or wrong, and the more we try to guess the harder it will be to be certain if we know what we are talking about.

Even the idea of an Earth identical to our own is patently ridiculous since it stretches belief but is not impossible since in an infinite universe the potential chance for an Earth like ours to exist elsewhere *is not zero*.

Even our moral codes may either be replicated or inversed elsewhere but we have no way of knowing this for certain.

Imagine two worlds, Hluaseila and Athyasla, one where all sentient life lies, the other where all sentient life tells the truth. *All* lies. *All* truth. We claim that deception is wrong and honesty a virtue but imagine yourself stripped of any delusion, belief, or conviction that is not one hundred percent truth. If there is no afterlife you know it, no god, you know it, if there is both but the circumstances are horrific in some way, *you know it*.

Or imagine a world where all things are deceptive, so this is not even Hluaseila or Athyasla but is called Alcuirren or Myrchaelia or Ariaxylos and even trying to get to the truth of a name is so impossible that you don't know who you are. After all, even if we have delusions and beliefs, we also have a certain sense of self; I am me and not you. Here though since everything is a lie even the idea of self, if you have it, is denied, and if denied and you lack a sense of self you lie and claim you have one. One can only be truthful if their lies correspond to reality as we understand it.

This is the problem of turning to use our imaginations to explore the real world. Even our imaginations are limited so whatever we imagine must always come up short of whatever is really out there.

And there is another point to consider; our politics.

Humans are hierarchal and base our existence on the idea of leaders and followers, but also on the idea that those followers have enough autonomy to not merely be extensions of their leaders. In previous eras, the idea of a king or emperor dominated the human mind, and even today, we attribute to leaders the traits we often do not attribute to ourselves.

This discrepancy of leader and follower might not exist on another world, but in what way? I mentioned a group mind and a solitary denizen of its own world, but what other methods are possible for a political alien system of governance?

Imagine T'csyalne.

Here we have a world where each day who was a slave is now the master, and master slave. Is this possible?

Is such a system possible? Each day one rises into the position occupied by another yesterday. Again, is this possible?

Not that it is likely, not that it is sensible, is it possible?

After all, all human systems of government are possible, and many different styles have been tried to varying success so it is not impossible for such a system as this to exist, elsewhere.

And if one found themselves in such a system, what conclusions might one draw from it?

Tshayaera today is the mistress of her land and Il Shyeirsyla her slave.

She mistreats her slave, beats her, and treats her as badly as possible and tomorrow the roles are reversed, with the punishments alone directed to the slave being the same. You might argue it would make sense for the one in power to be lenient since she will be treated just as badly by those she abuses today, and she would say no. She would say no because the rules are this person is the abused, this person the abuser. Pragmatism does not enter here.

So, is this system flawed? It is to us, yet our own flawed system we operate under and expect others to operate under as well. And that assumes such a world as this is both applicable, logical and understandable to us. Other systems might have no logic at all as we can surmise.

Ixchelel and Xu Xsulsyal are worlds with neither land, sea nor sky, but only mass, mass which obeys no laws of physics. Those on Ixchelel however do not understand how the laws of physics are broken on Xu Xsulsyal and those on Xu Xsulsyal do not understand how the laws of physics are broken on Ixchelel. For these reasons, both sentient species are often at war, though the methods of this war are invisible, both to ourselves and even to them since reaching one world or the other results in the perceptual transformation of one being into another. To go is to die and become the soldier of one's enemy, yet even still armies are sent, and soldiers die.

Is this reasonable? No. But is war reasonable? No. Yet the rules are expected even as the rules are violated and leave the individual in the wreckage of destruction.

On Aulhcuzleul the letter *A* does not exist. Instead, the world is spoken of as Ulhcuzleul and any who see the letter *A* do not nor cannot recognize the sound. All life are birds there, ravens with human shapes or hawks with the faces of women. Yet they cannot understand what the word "bird" means, since their language attributes themselves to something else. So, one may greet them but a single letter is ripped from your vocabulary in meeting them and all attributes you recognize in them they do not recognize in themselves.

How then can you explain to them what they seem like to you?

On Alchochoder the lengths of our lives are measured out. A single virus acting on a single cell will direct exactly how long you live, and each sentient being there, at their death, results in ten members of our species' extinction, without fail. How? They don't know. There is no cosmic connection, no explanation at all, but the more you try to piece this together, the more you try to know how this is possible the more you must rely on your own frame of reference, and if the frame of reference is wrong or too small to be applicable here it is ultimately a fool's errand. And worse, imagine if the only explanation they give to you is "Icech Iceh Ruel," words which they do not know themselves, since they have as much knowledge as you about how the universe works. That is the other paradox of intelligence, that the intelligent elsewhere know more about themselves than the intelligent here know about themselves, that somehow in being other, other translates to wiser.

And finally, let us come to En-II-Shayalal Rihastra.

It is a world separated not by space but by time. It is our own Earth one billion years in the future. Perhaps we have seen AI emerge, or become immortal, tended to by machines for millions of years, or perhaps at some point the planet was an industrial nightmare of super-cities, all spewing poison into the atmosphere, or perhaps for millions of years it was an ecological paradise of rare device. Human civilizations on average last a few centuries. In the span of a thousand years, species can begin to emerge and species die. In a billion years whatever was human is gone, and whatever humans are, if we survive, is as different from us as we would be from bacteria.

So, how might you communicate with such a sentient being, assuming we are still sentient in that future age and time?

Have they sex? Have they machines? Have they eyes, or tongues, or mouths, perhaps five tongues, perhaps the ability to speak telepathically, who knows? Perhaps the gentleman at the start of the essay was more human than one might care to admit, separated from us only by year, not country.

But I ask again, how might communication be possible?

Every generation we remake anew all expectations of tomorrow, and all expectations of what might have been yesterday. We do not exist in those pasts or those futures yet expect that the more we know the more we live in those places we never lived in, nor ever have lived in. The alien paradox is knowing that knowledge does not nor can equal certainty, and that to know and assume is not the same as being right. As such the goal is not to answer what is alien but to expect all things as potentially alien, under the assumption that out of a trillion options and opinions someone one day might get it right, even if what they assumed is we are exactly as they are, they are exactly as we wish to be.

That is the paradox that not knowing but always assuming our expectations must eventually be proven right.